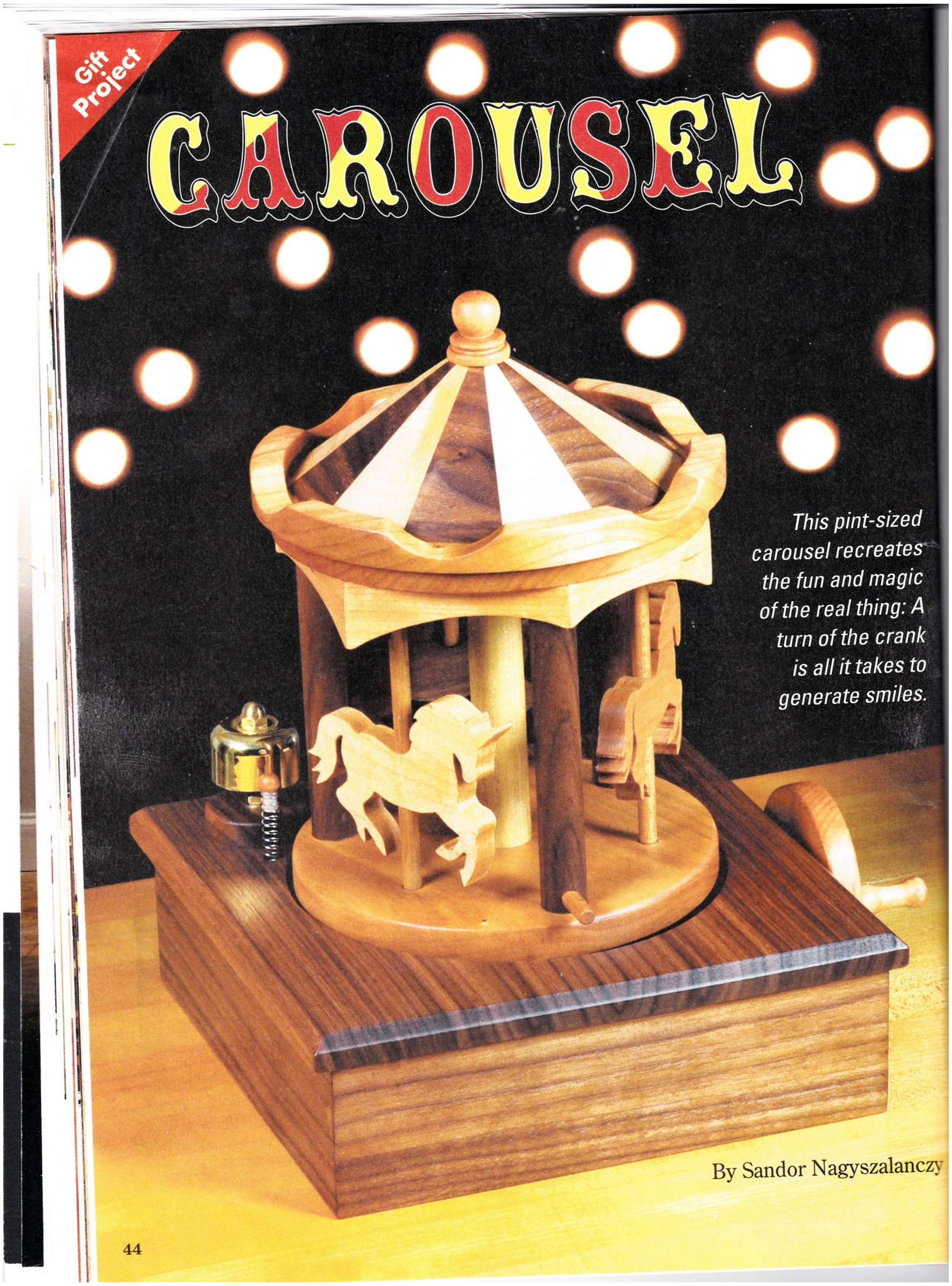
Making Hand-Cranked Pony Carousel In December of 2015

By: Dale C. Maleey

Re-created from web pages I created when I built it back in late 2015

Toy Carousel

The December 2015 issue of Woodworker's Journal magazine has a neat pattern to make a toy carousel.



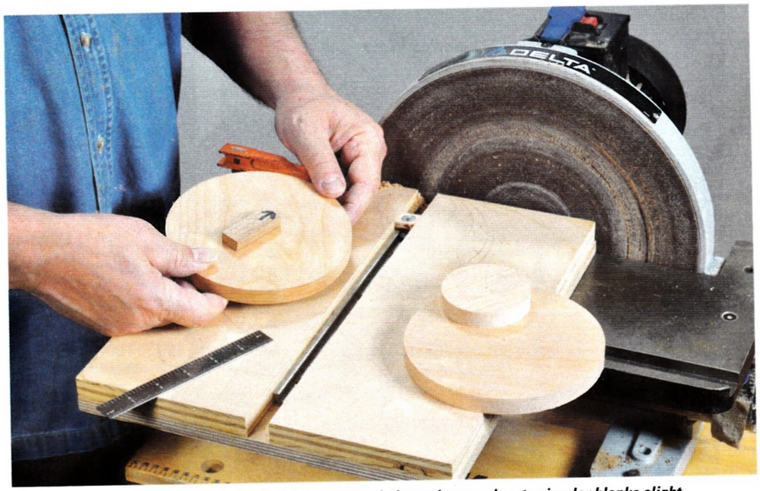
Gift Project

CAROUSEL

This pint-sized carousel recreates the fun and magic of the real thing: A turn of the crank is all it takes to generate smiles.

By Sandor Nagyszalanczy

44



To create the larger discs needed to build the carousel, the author rough cuts circular blanks slightly oversized, then uses a shop-made circle jig and a benchtop disc sander to sand them perfectly round and to final size.

My favorite ride at an old-fashioned amusement park or carnival midway is the carousel. Riding a rollicking steed as it goes up, down and around is sure to get your blood pumping. So I decided to create a miniature wood carousel that captures some of the colorful fun of the real thing. The finished product features a segmented conical tent top, decorative crown ring, festooned columns and three horses which go up and down as the carousel rotates via a simple hand-cranked friction drive mechanism hidden inside a box-like base. There's even a bell that dings at each rotation! The finished carousel is guaranteed to bring smiles and delight to all who see it. With that said, this presentation piece is not intended to be used by children, both due to the small parts involved and because, as you'll discover, this is a build that requires a lot of patience and precision on your part!

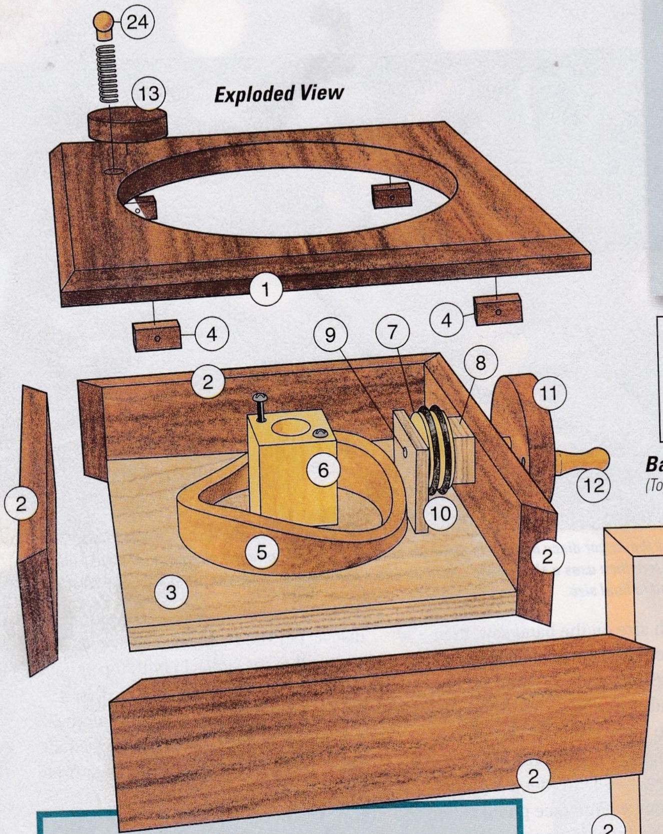
Making the Discs and Turned Parts

A good place to start this project is to make the seven discs/rings and three turned parts needed for the carousel (see the *Material Lists*, pages 46 and 48). To make the larger diameter discs, my favorite method is to cut the discs to rough size on the band saw, then sand them to their final diameter using a sliding-stop circle jig fitted to the disc sander, as shown above. Smaller discs are more easily turned on the lathe. Once turned to size, the drive wheel gets two 1/16"-deep V grooves formed on its edge (see photo at left, below). These hold a pair of 1¾" outer diameter/1½" inner diameter rubber O-rings that provide grip for rotating the carousel. Still on the lathe, turn the tent-topping finial, crank handle and bell dinger from scraps of dowel left over after cutting the carousel's columns and main shaft to length.

Using a ruler and protractor, mark out the location of all holes atop the top disc as per the *Drawing* on page 48. To assure that the holes in both top and bottom discs are exactly aligned, first bore a 3/4" center hole in both on the drill press, for the carousel's main shaft. Then, stack the two discs and lock them together with a short length of 3/4" dowel. Now bore one of the 1/4" horse rod holes through the discs and press a short length of dowel into this hole. Finish drilling all the 1/4" holes, then switch to a 5/8" Forstner bit and bore the three column holes. After separating the discs, ream out the 1/4" holes with a 9/32" bit. Round over the upper edge of the bottom disc with a 1/8"-radius roundover bit, as well as both edges of the crank wheel.

After turning the carousel's drive wheel to final diameter on the lathe, use a skew or parting tool to cut two shallow channels for a pair of rubber O-rings. These help give the drive wheel enough traction to rotate the carousel.

Holes for the main shaft and three outer columns, as well as for three rods that the horses are mounted to, are drilled in both upper and lower carousel discs at the same time. Clamps and scrap dowels keep the discs in position.



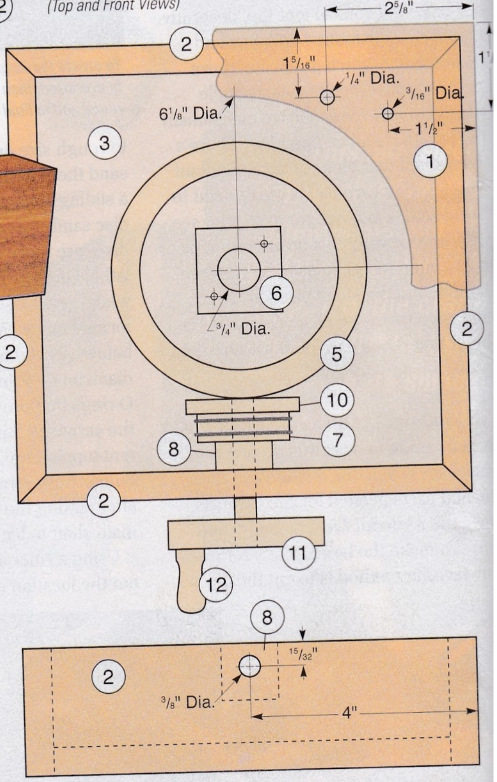
Exploded View

Assorted Hardware:

Shaft Bearing Block Screws: (2) #8 x 2¼"
Crank Handle Screw: #6 x 1"
Finial & Tent Top Screws: (4) #6 x 1"
Drive Wheel O-rings: (2) 1¾" O.D. x 1½" I.D.
Bicycle Bell: Small Brass
Bell Support Brass Machine Screw: #10 x 2¼" (Plus 3 washers, 2 nuts, 1 cap nut)
Bell Dinger Spring: 1/4" O.D., 1½" long
Split Washers: (3) 1/4"

Not intended for use by children.
⚠CAUTION:Choking hazard/Sharp Edges. Small parts and sharp edges. Not for children under 8 years of age.

Base
(Top and Front Views)



MATERIAL LIST (Base)

W= walnut, C= cherry, M= maple, P= plywood	**T x W x L**
1 Top (1) **W**	1/2" x 8½" x 8½"
2 Sides (4) **W**	1/2" x 2¼" x 8"
3 Bottom (1) **P**	1/2" x 7" x 7"
4 Top Cleats (4) **W**	3/8" x 3/4" x 1"
5 Wavy Ring (1) **C**	1" x 4½" Dia.
6 Shaft Bearing Block (1) **M**	1½" x 1½" x 2"
7 Drive Wheel (1) **M**	1/2" x 1⅝" Dia.
8 Drive Wheel Spacer (1) **P**	1/2" x 1" x 1"
9 Drive Shaft (1) **M**	3/8" Dia. x 2⅝"
10 Drive Shaft Support (1) **P**	1/4" x 1¾" x 2"
11 Crank Wheel (1) **W**	1/2" x 2¾" Dia.
12 Crank Handle (1) **C**	1/2" Dia. x 1⅛"
13 Bell Support Disc (1) **W**	3/8" x 1½" Dia.

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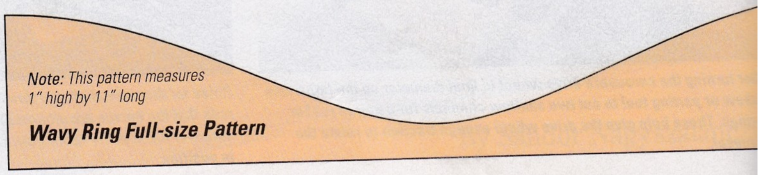
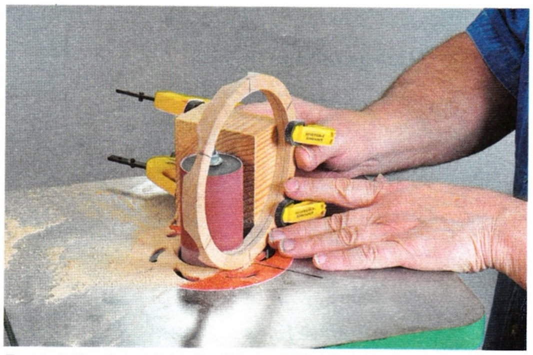
MORE ON THE WEB

VIDEO For a video showing the carousel in operation and the process for cutting and assembling the tent top wedges, please visit woodworkersjournal.com and click on "More on the Web" under the Magazine tab.

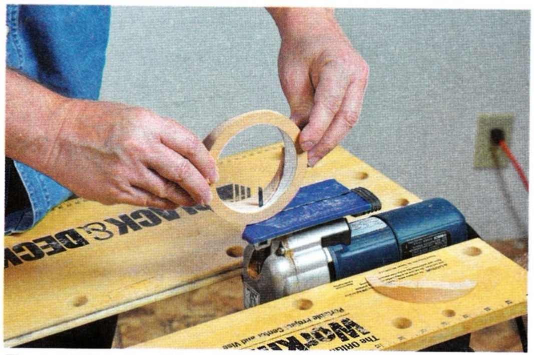


Note: This pattern measures 1" high by 11" long

Wavy Ring Full-size Pattern



To create the six semicircular divots, which adorn the top edge of the crown ring, the narrow ring is clamped to a square block, positioned via markings 60° apart, then sanded using an oscillating spindle sander.



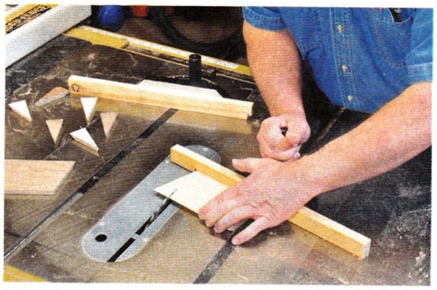
The undulating edge of the wavy ring, which raises and lowers the horse rods as the carousel rotates, is trimmed with an inverted jigsaw following the paper pattern (below) glued around its inside edge, then it's sanded smooth.

Crown Ring and Wavy Ring

To add a bit more circus flair to the carousel, the outer edge of the top disc receives a crown ring that has decorative cutouts around its top edge. The ring seats into a 1/8"-deep, 1/4"-wide rabbet routed into the upper edge of the top disc with a piloted rabbet bit. To make the ring, take the 6½" disc made earlier and mark one side into six equal segments, then remove a 5½"-diameter disc from its center, either using a jigsaw and drum/spindle sander, or a lathe and a parting tool. The goal is to achieve a snug fit between the inside of the ring and the rabbet in the top disc.

The semicircular decorations around the crown ring's top edge are created using an oscillating spindle sander (or drum sander) fitted with a 2"-diameter drum. First, press the ring (bottom side down) into the top disc and scribe a pencil line around the inside of the ring flush with the disc. Remove the ring and use a square to align one of the segment divisions marked earlier perpendicular to the sander's table. Clamp the ring's non-marked side to a large square scrap block. Keeping the block in firm contact with the table, align the perpendicular mark with the spindle/drum and sand away a semicircular hollow as deep as the pencil line (see left photo, above). Repeat this process to create all six semicircles.

To raise and lower the horses as the carousel rotates, the lower end of the horse rods ride atop the undulating edge of a wavy ring. Make this ring by cutting out the center of the 4½"-diameter x 1" thick disc with a jigsaw, thus creating a 1/2"-wide ring. Print out a full-size paper template of the wavy ring from the *Drawing* below, and use spray glue to stick it to the inside of the ring. Using a jigsaw inverted and clamped to a workbench, carefully cut the waste away with a fine-tooth blade. Refine the wavy edge with a sanding drum or oscillating spindle sander, then hand-sand the edge until it's smooth and fluid.

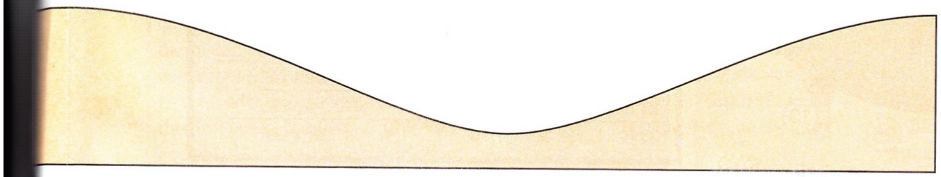


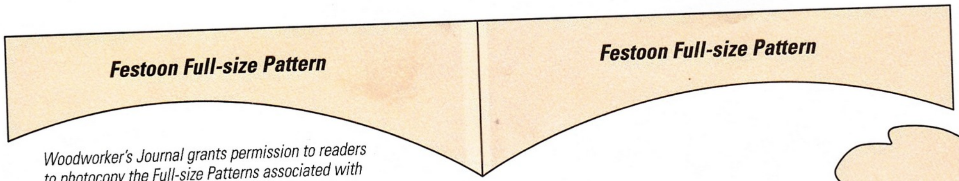
The author used the table saw and a pair of miter gauges fitted with wood fence faces to cut the 12 wedge-shaped pieces needed to make the carousel's tent-like top.

Making the Tent Top

The carousel's cone-shaped tent top is made up of a dozen pie wedge-shaped pieces. (The entire process is shown in the *More on the Web* video.) Start by creating two 16 x 3¾" x 3/8" blank strips from light and dark color woods (I used walnut and maple). On the table saw, tilt the blade to a 37° angle and bevel one long edge of each strip, running the strip vertically past the blade. Cutting the pie wedges is easiest done using two miter gauges, running in the slots on either side of the blade. Screw to each gauge a temporary wood fence face that extends at least a few inches past the saw's line of cut. Now, using an accurate bevel gauge, set each miter gauge to 77.9° relative to the saw blade. Set the blade's tilt to 9° and its height to 1/2". If your table saw's blade tilts to the left, start by mitering the end of each blank (with its beveled edge against the fence) using the right-hand gauge. Now with the left-hand gauge, set the blank's square face against the fence and cut off a triangular wedge with a base (short side) that's 1$\frac{15}{32}$" long. Once you've cut one wedge from each blank strip, repeat the process five more times. (If your table saw's blade tilts right, first trim blanks with the left-hand gauge, then cut the wedges with the right.)

To assemble the wedges into a conical top, set alternating-color wedges face-down atop strips of masking tape, making sure their bottom corners are flush and edges are butted together tightly. Use a brush to apply glue into each joint, then pull the ends of the assembly





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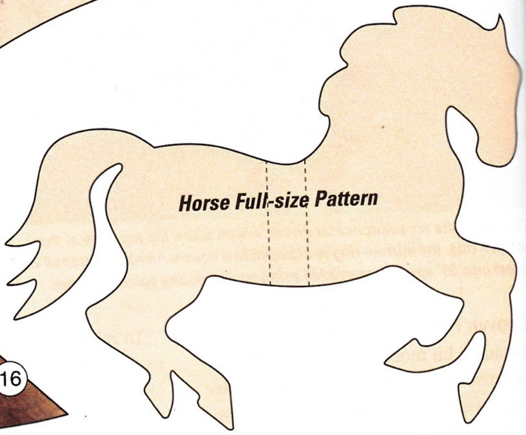
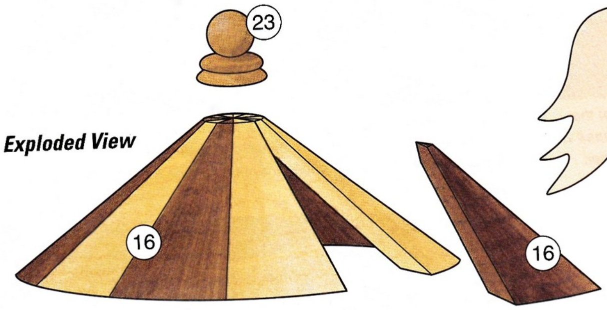
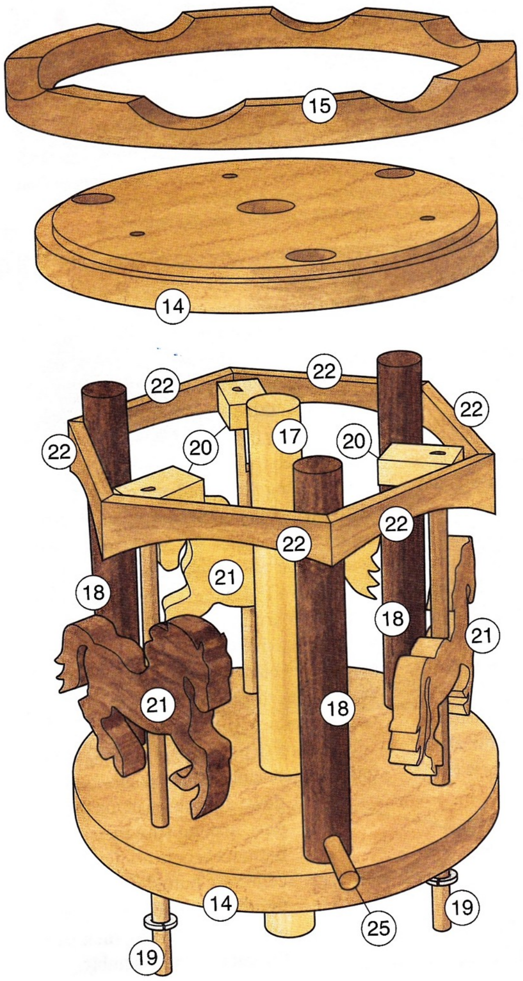
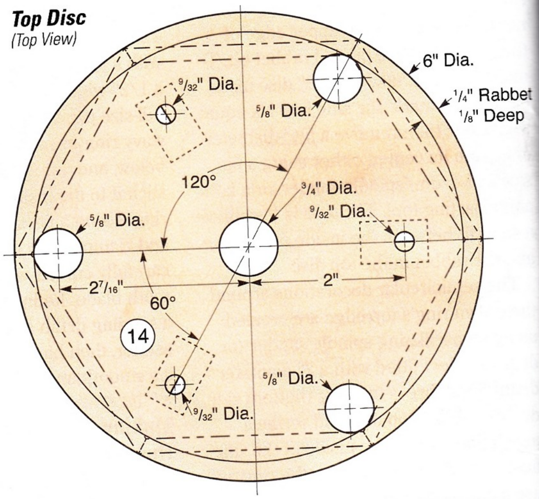


Exploded View



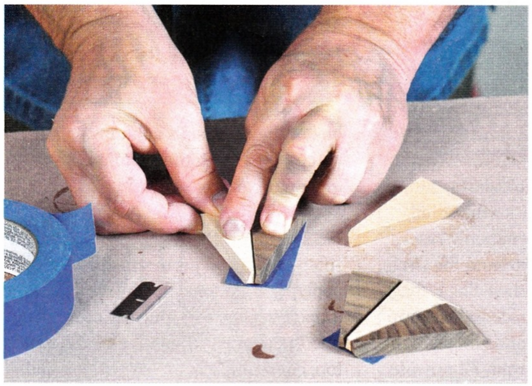


Top Disc
(Top View)



MATERIAL LIST (Carousel)

W= walnut, C= cherry, M= maple, P= plywood	**T x W x L**
14 Top and Bottom Discs (2) **C**	1/2" x 6" Dia.
15 Crown Ring (1) **C**	1/2" x 6½" Dia.
16 Tent Top Wedges (12) **W&M**	3/8" x 1 15/32" x 3⅝"
17 Main Shaft (1) **M**	3/4" Dia. x 8"
18 Outer Columns (3) **W**	5/8" Dia. x 5⅞"
19 Horse Rods (3) **C**	1/4" Dia. x 7⅛"
20 Horse Rod Blocks (3) **M**	3/8" x 5/8" x 1"
21 Horses (3) **W, C, M**	3/8" x 2¾" x 3¾"
22 Festoons (6) **C**	3/16" x 1" x 3 1/32"
23 Finial (1) **C**	7/8" Dia. x 7/8"
24 Bell Dinger (2) **C**	5/16" Dia. x 1/2"
25 Bell Dinger Dowel (1) **C**	1/4" Dia. x 1⅛"



The tent top wedges are taped together, alternating light and dark woods, in preparation for assembly. After brushing glue onto all facing edges, you'll roll up the taped wedges to form the cone-shaped top.

Cut the carousel's three prancing horses from hardwood blanks using a small band saw, following the outline of the pattern shown on page 48. Copies of the pattern are glued atop each blank with spray adhesive.

together and tape the final joint tight, keeping the base of the assembly flat on the workbench. Carefully check the alignment of the wedges and tweak as necessary. After the glue dries, sand the top smooth. With a small plane or sanding block, flatten the top of the cone to create a circular area 3/4" in diameter. Glue on the turned finial and, after the glue sets, secure it from underneath with a #6 x 1" screw.

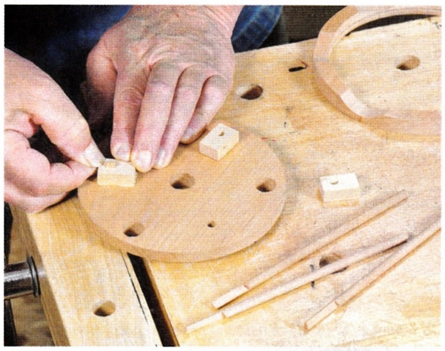
Fun with Festoons

To make the festoon strips that adorn the underside of the carousel's top, cut out six 3¹⁄₃₂" x 1" x 3/16" strips and miter the ends, thickness wise, at 60°. Using the template on page 48, cut out and sand smooth the festoon profile on each strip. Lay the strips face-down, tightly end-to-end atop a length of masking tape. Brush glue into each open miter joint, then roll the strips up into a tight hexagon. After sanding off any dried glue, apply glue to the straight edges and clamp the festoons to the underside of the top with the smaller "peaks" around the columns.

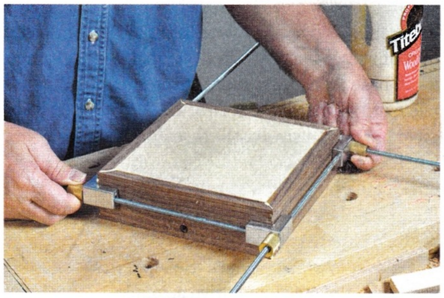
Creating the Horses

Each of the carousel's three horses is cut from a 3¾" x 2¾" x 3/8" blank, each from a different color wood. After printing out three full-sized versions of the horse outline shown in the *Drawing* on page 48, use spray adhesive to mount them atop the blanks (you may choose to create other animals: cows, elephants, etc.; I made one of mine a unicorn). On the drill press, bore a 1/4" hole through each blank, centered on the width of the stock. Carefully cut out each figure with a scroll saw or small band saw fitted with a narrow (1/8"- or 1/16"-wide) saw blade. Sand all sawn edges smooth using jewelers' files and short strips of sandpaper.

To keep the horses from rotating as the carousel spins, the ends of the three 1/4" horse rods must be cut into half dowels that will slide in blocks with half-round holes. To keep the rods from turning as they're cut, tape each tightly to the edge of a square piece of 1/4" scrap stock. Set your table saw's rip fence to cut exactly half the dowel away. Stop the cut so that only 1" at the end of each rod is trimmed. Round over the untrimmed ends of the rods until they're smooth and blunt. Slide a 1/4" split washer onto each dowel and glue it 3/4" up from the blunt end and secure with a drop of cyanoacrylate (CA) glue; it serves as a weight to keep the rod in contact with the wavy ring. Now make the three 1" x 5/8" x 3/8" maple horse rod blocks, first boring a 9/32" hole through the center of each. Cut the blocks in half (leaving a half hole) and glue a 1" x 5/16" x 3/8" maple strip to each cut edge. Glue the blocks onto the underside of the carousel's top disc, carefully centering them on the 9/32" horse rod holes.



A short length of half-round dowel helps center the half-round hole blocks (that prevent the horses' rods from turning) as they're glued to the underside of the top disc.

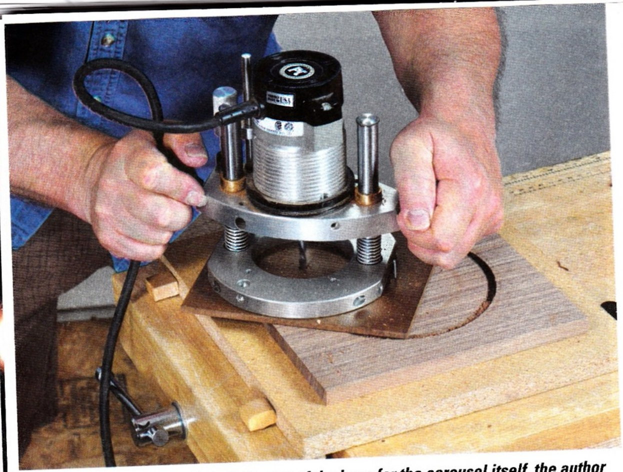


The author uses a set of picture frame clamps to secure the mitered sides of the carousel base to its plywood bottom. A hole in one side is for the crank mechanism's drive shaft.

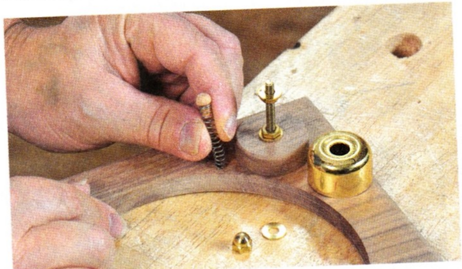
Base and Drive Mechanism

The base consists of a mitered frame around a 1/2" plywood bottom capped with an overhanging top. Start by marking the exact center of the top-facing side of the bottom. Cut 45° miters on the ends of the four side strips. After drilling the 3/8" drive crank hole through one side, glue the sides around the bottom.

After cutting the top to final size, rout out a 6⅛"-diameter centered hole using



To cut out the hole in the top of the base for the carousel itself, the author uses a small plunge router and a sub-base jig fitted with a pivot pin. The walnut top is temporarily clamped and nailed atop a scrap during routing.

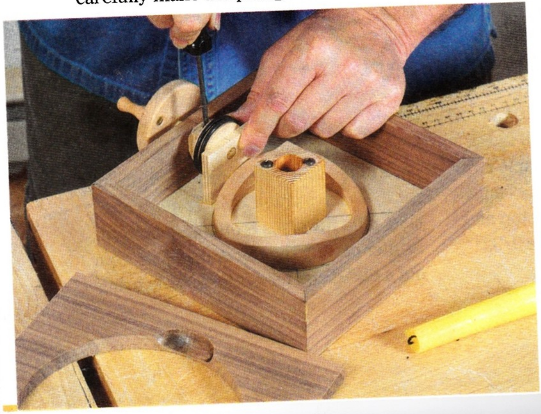


To create a "ding" each time the carousel goes around, a spring with a turned ball on the end is deflected by a short dowel set in the carousel's outer column. When the spring rebounds, it strikes a small bike bell mounted next to it.

a plunge router and 1/4" spiral-fluted straight bit. Since the hole is too small to rout with a standard circle jig, make a sub-base jig for your router from a piece of 1/4" hardboard. Drill a 1/16" pivot hole (for a small nail) through the sub-base exactly 3 1/16" from the outer edge of the bit, as well as one through the exact center of the top. Set the router's plunge stop so the bit cuts just a hair over 1/2" deep. Place the top on a scrap piece of stock and drive a couple of nails near the pivot hole. Press the pivot pin into the jig and center hole and carefully make the plunge cut a little at a time (top photo at left). When the bit starts cutting into the scrap, rout only halfway around the circle, then clamp that side to the scrap and complete the rout. To provide clearance for the drive wheel and spacer, rout a 7/16"-deep recess on the underside of the top as shown in the photo below, using a 1/2"-diameter cove bit. Finish the top by putting a decorative bevel all the way around its outer edge.

Bell Mechanism

The bell mechanism consists of a small-diameter bicycle bell (removed from its handlebar bell mechanism), a medium-strong 1/4" x 1½" compression spring with the turned dinger epoxied into one end and a short dowel projecting from the edge of the carousel. When the dowel rotates past the bell (clockwise), it deflects the spring, which then bounces back to strike the bell. First, bore a 1/4" hole for the spring and a 3/16" hole for the screw that secures the bell and support disc to the top of the base, locating both as shown in the *Drawing* on page 46. Attach the bell and disc with a #10 x 2¼" machine screw, using nuts and washers to secure them, as shown in the middle photo on this page. Thread the spring into its hole, positioning the dinger ball 1" high (secure it with a drop of cyanoacrylate). Now drill a 1/4" hole for the dinger dowel into one of the carousel's columns so it'll end up flush with the bottom disc, and glue in the dowel.



A small screw secures the drive wheel and spacer to the shaft that holds the crank wheel. A little wax rubbed on the end of the main shaft and the edge of the wavy ring keeps things rotating smoothly.

Final Assembly

After sanding all parts smooth and applying a nontoxic finish (see *Finishing Thoughts*, page 86), glue the crown ring into the top disc, then glue on the tent top, centering it in the crown ring and securing it with three #6 x 1" screws driven from underneath. Now glue the carousel's columns and main shaft into the top and bottom discs, making sure the main shaft is flush with the top disc and the columns' ends are flush with both discs. Set the horse rods through their holes in the bottom disc, slide on the horses, then position and secure with a few drops of CA glue.

Inside the base, center the wavy ring and glue it in place. Also glue in the drive shaft support, taking care to align its hole square to the shaft hole in the side. After boring a 3/4" hole lengthwise through the center of the main shaft bearing block, carefully center it and screw it to the base with a pair of #8 screws. Sand the end of the shaft until it rotates easily in the block.

To assemble the drive mechanism, first loosely attach the crank handle to the crank wheel with a #6 x 1" screw, then glue the wheel to the 3/8" dowel drive shaft. Glue the wheel spacer to one side of the drive wheel, centering it on the hole. Press the drive shaft through the hole in the base, then through the drive wheel with the spacer facing out, then all the way into the support block. Drill a pilot hole through the spacer and use a #4 x 3/4" screw to secure it to the shaft.

Finally, attach the top to the base using four small cleats glued to the underside of the top on the short-grain sides, then screwed into the sides through oversize holes. For lubrication, rub a little wax on the main shaft and wavy ring, then set the shaft into the bearing block. All that's left is to turn the crank wheel clockwise, and start generating smiles.

Sandor Nagyszalanczy is a contributing editor Woodworker's Journal.

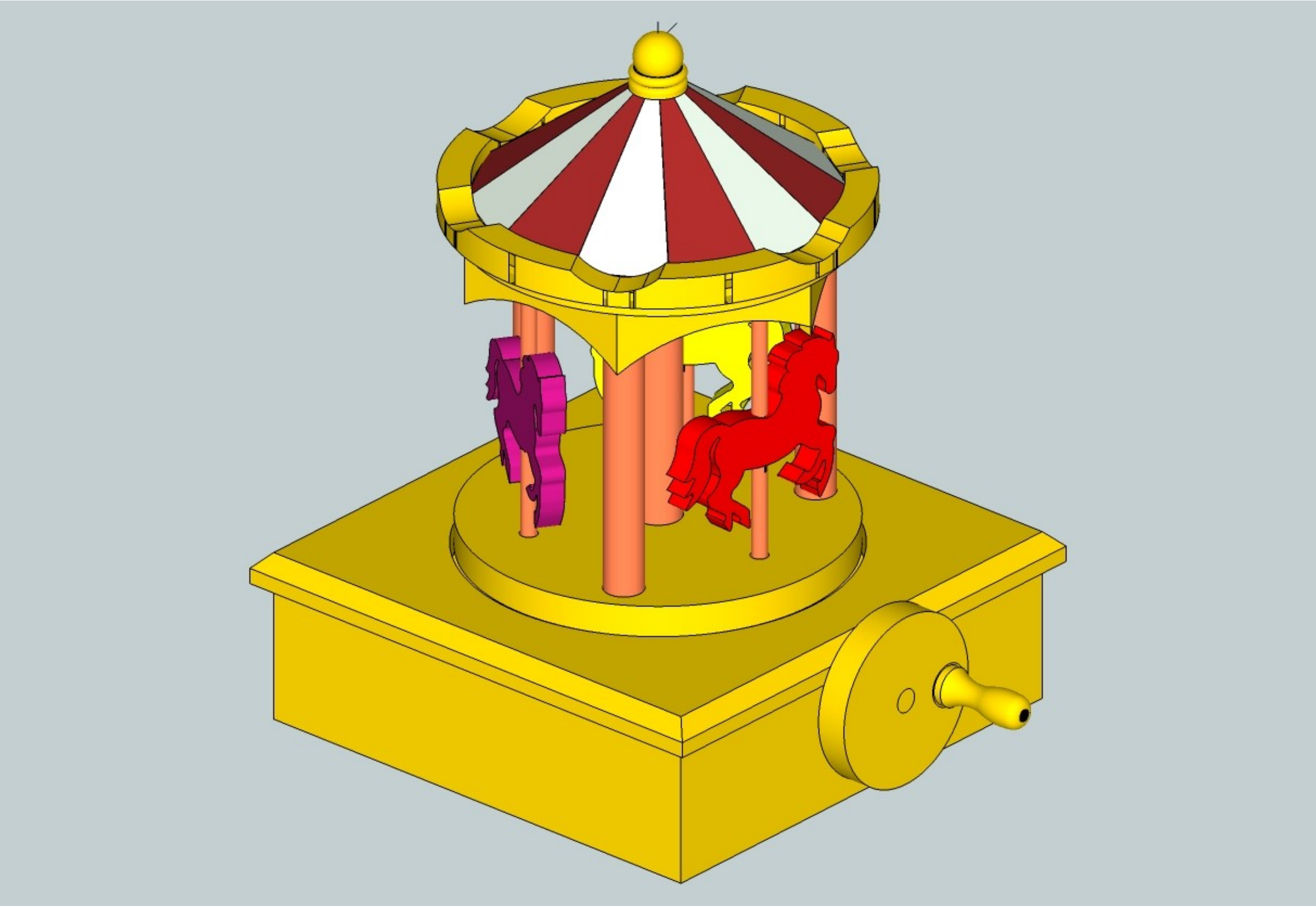
Also included is a link on how to make the colorful 12-sided top. You can watch it on YouTube:

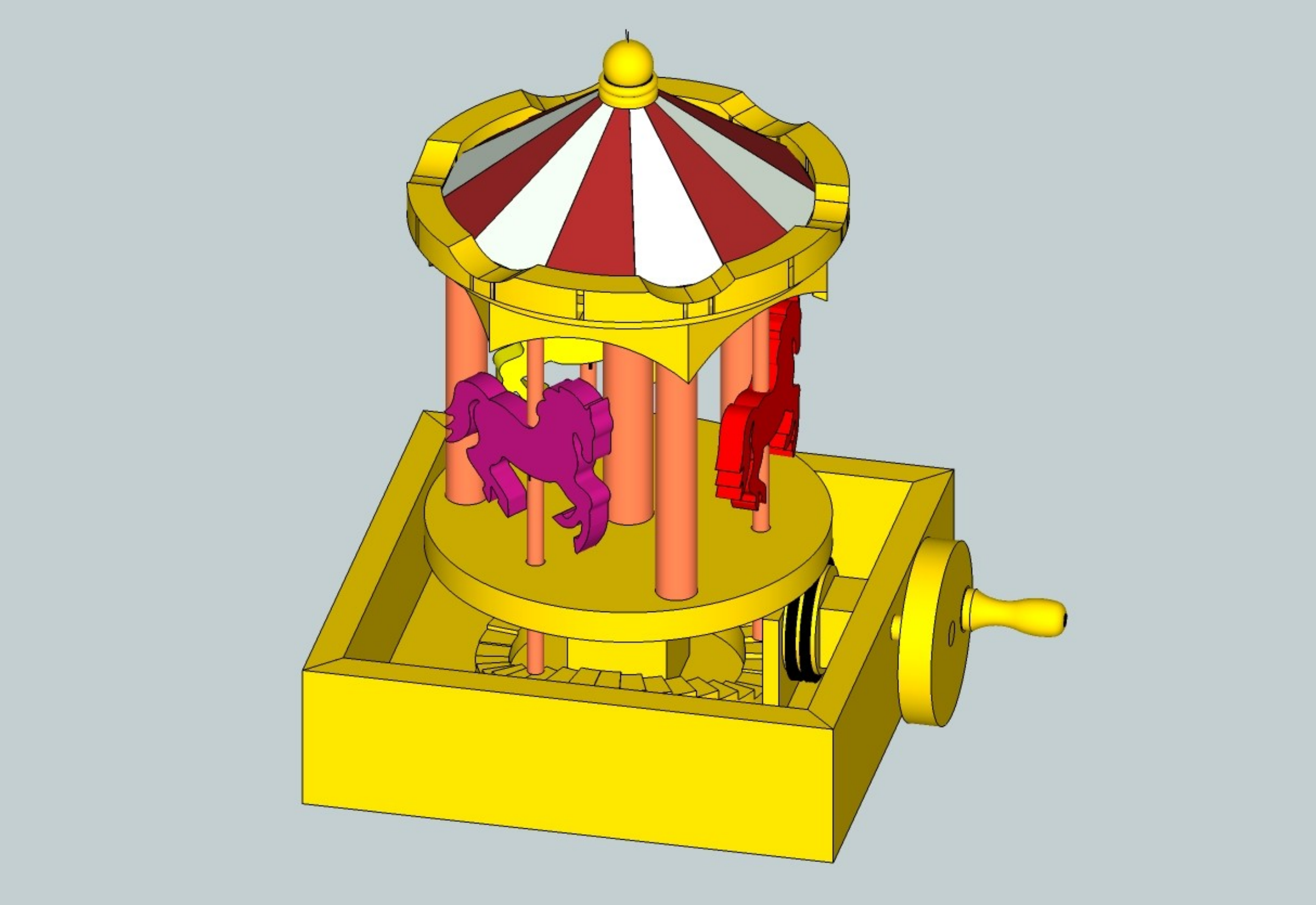
https://tinyurl.com/z4hyzmm2

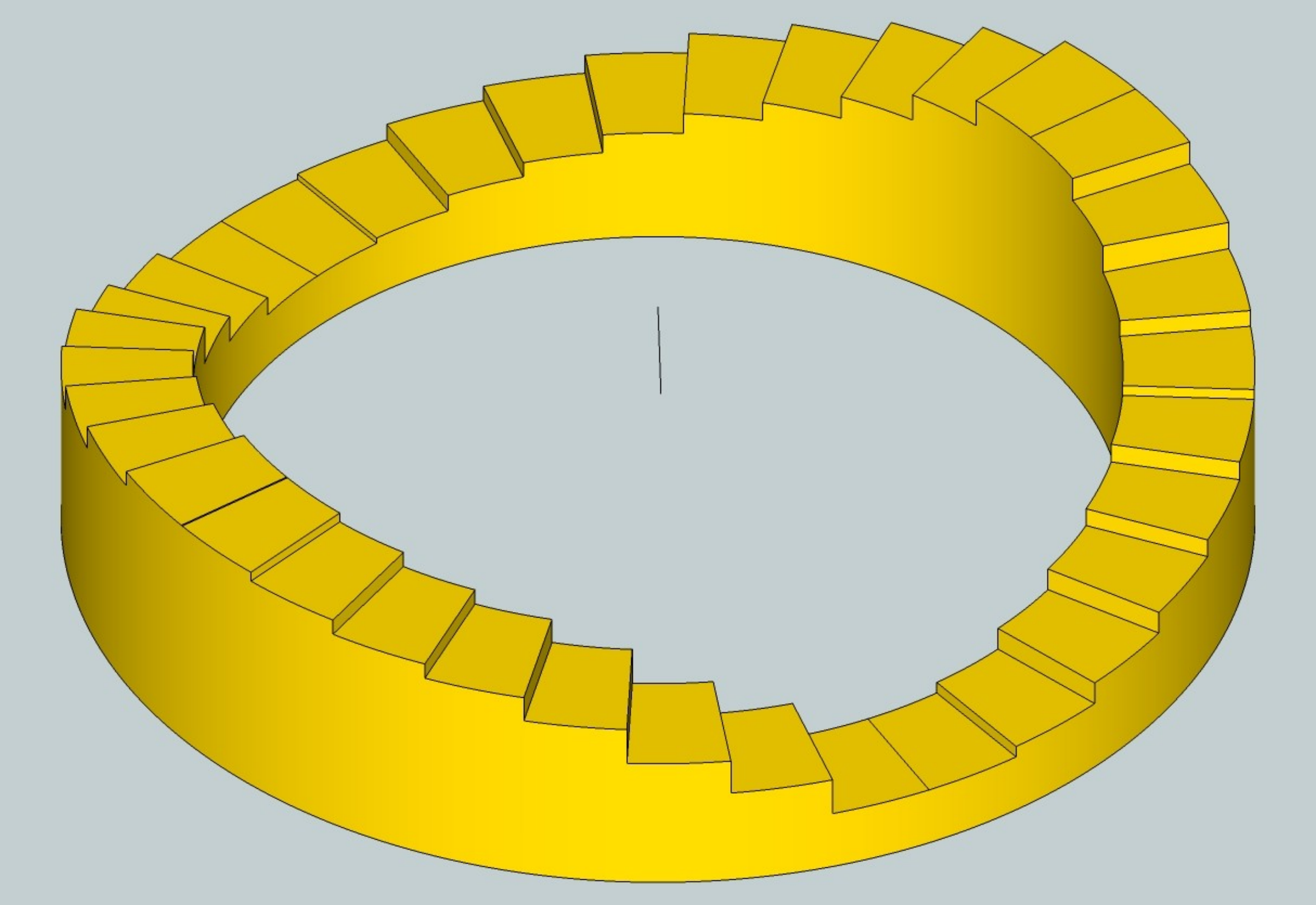
I decided to make 2 of these carousels.

Google Sketchup

I entered this pattern into Sketchup, which is a challenge. I could find no way to accurately draw the wavy ring that actuates the 3 horses. I approximated it using stair steps:







Wood Selection

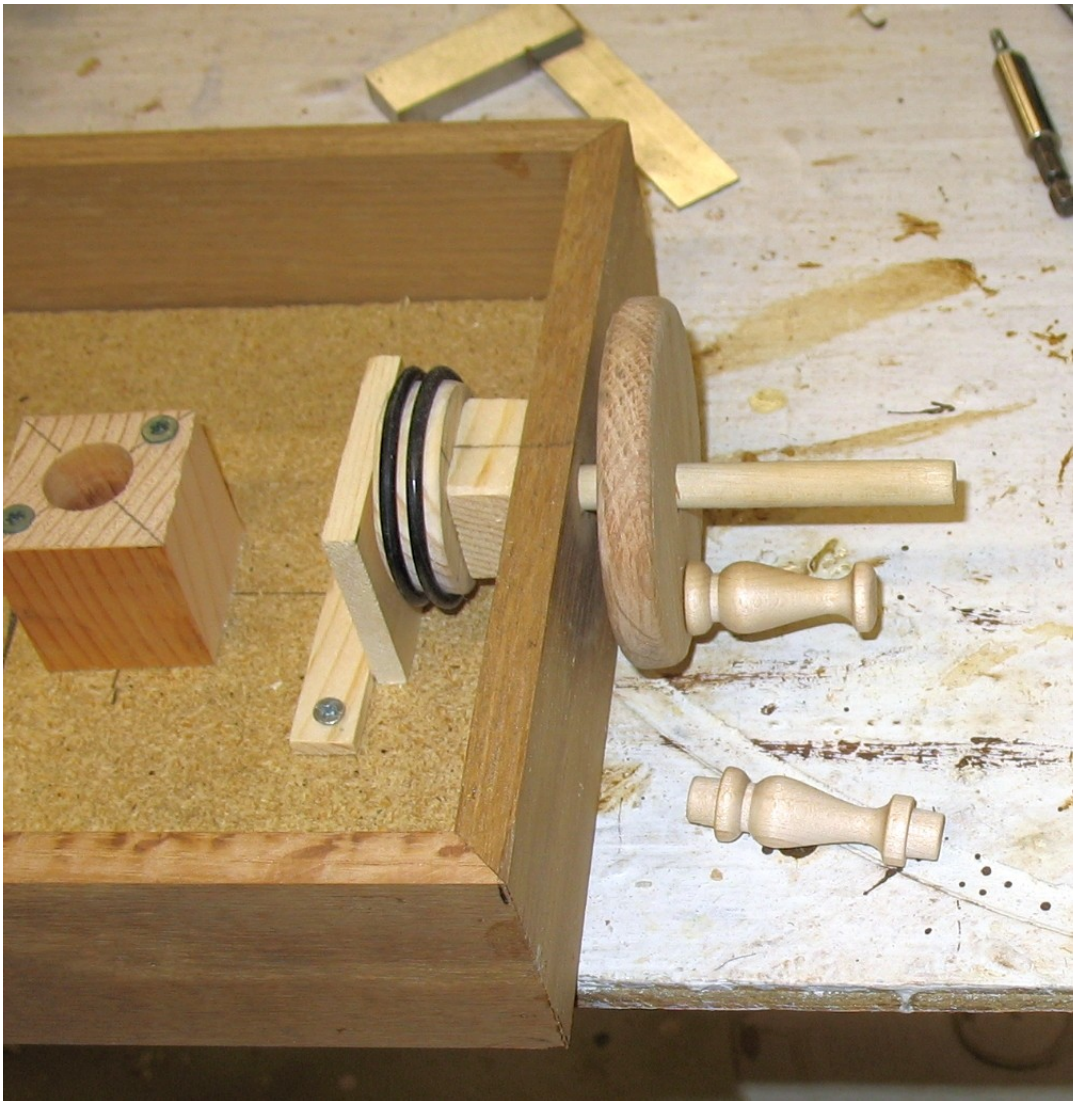
I decided to make 1 from walnut like the plans, but to use red oak on the 2nd one.
I bought some walnut and cherry from Rockler:

Bases

I got the O-rings from my local Fairbury Ace Hardware.

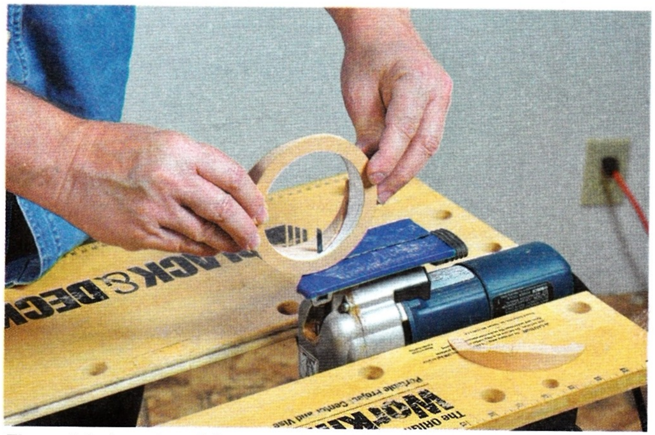
Crank Handles

For the crank handles, I modified some spindles I already had in stock, as shown above.

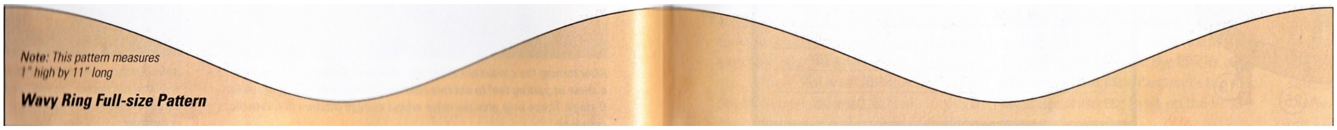


Making the Wavy Ring

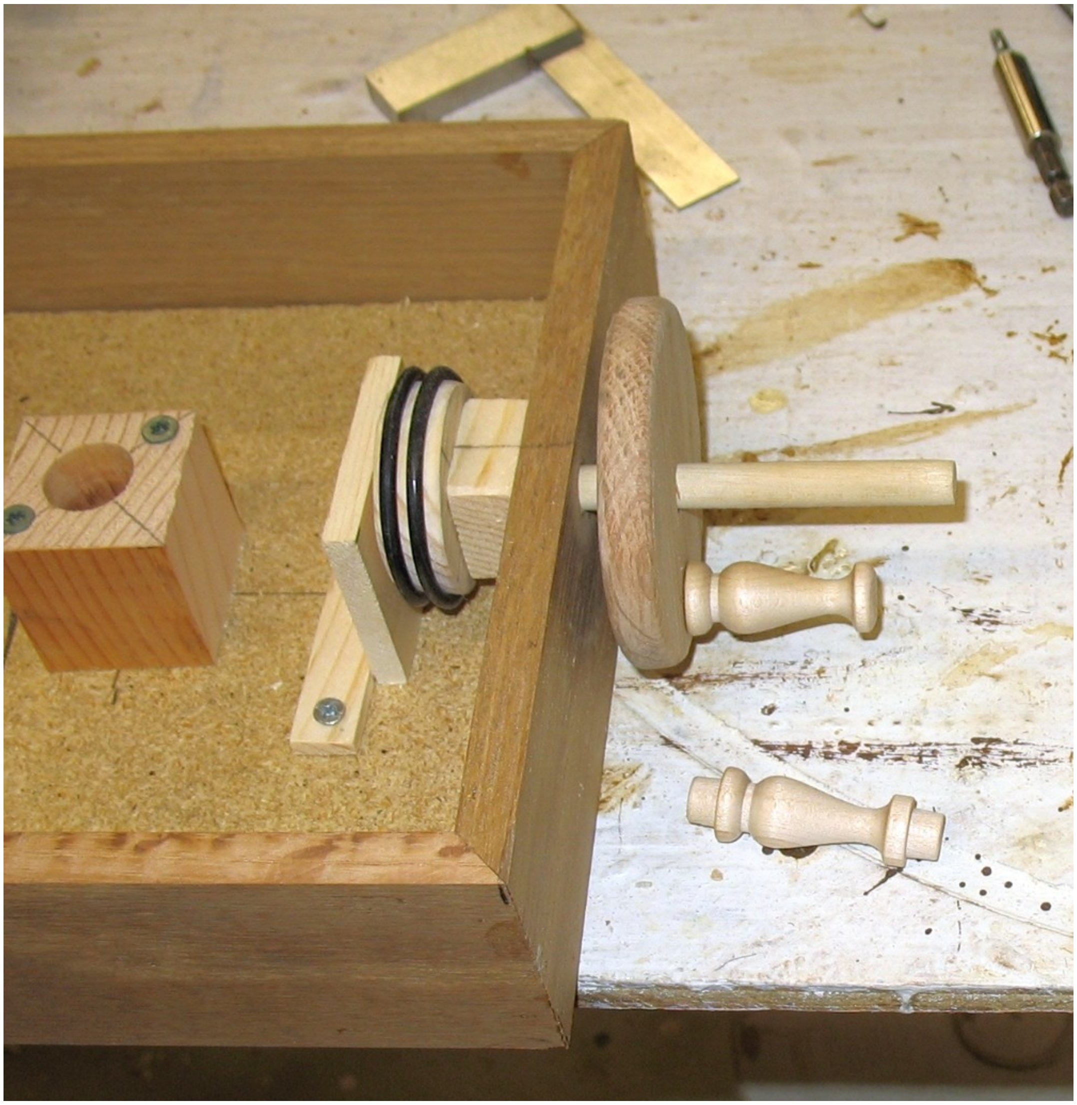
To make the wavy ring, I glued the paper pattern to the inside of the rings, then cut them using the upside-down jig saw like the pattern suggests:



The undulating edge of the wavy ring, which raises and lowers the horse rods as the carousel rotates, is trimmed with an inverted jigsaw following the paper pattern (below) glued around its inside edge, then it's sanded smooth.

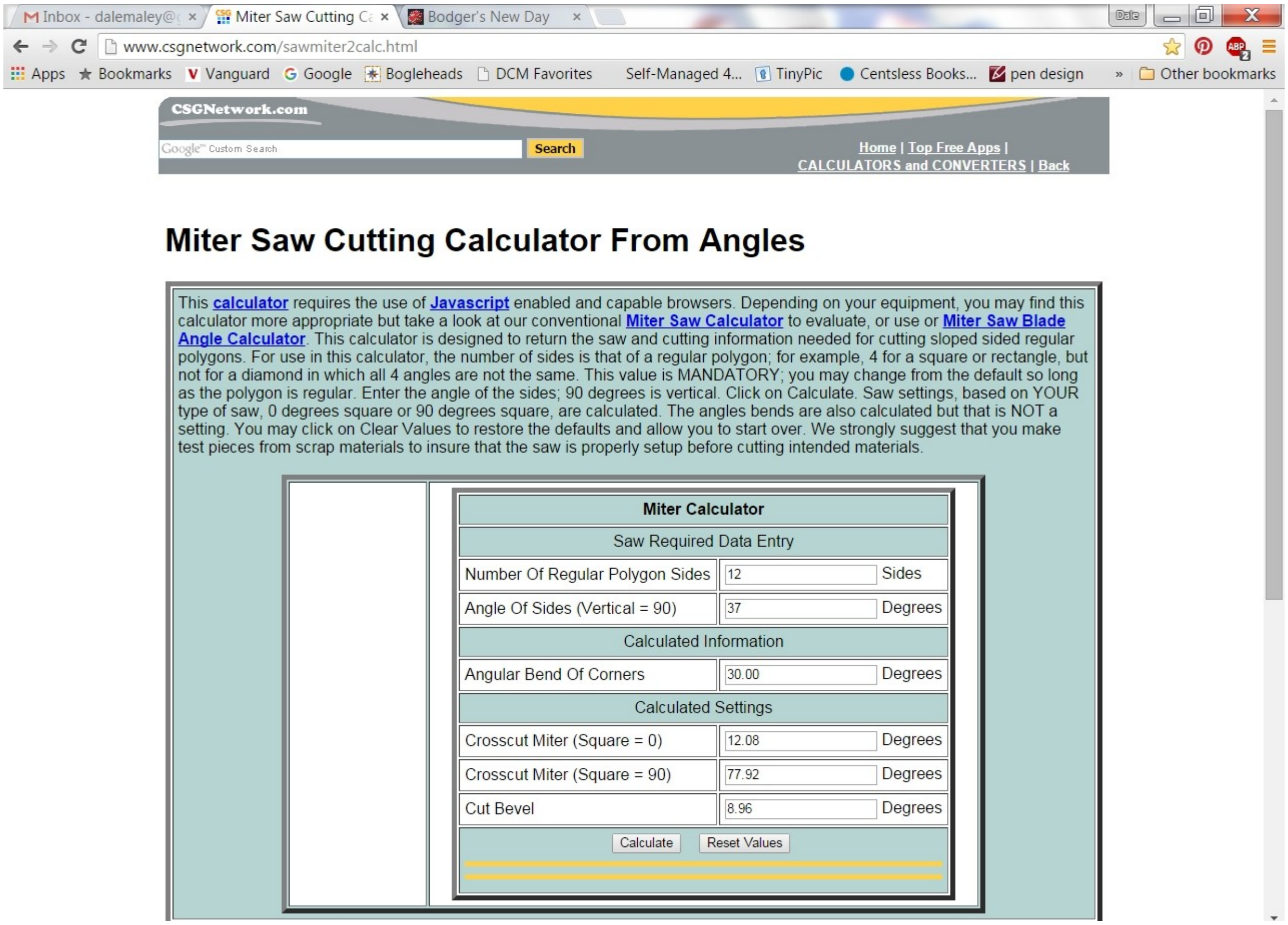

Note: *This pattern measures 1" high by 11" long*
Wavy Ring Full-size Pattern

I modified the plan by making the inner shaft bearing piece removable with 2 screws as shown below.



12-sided Roof

I used the linked video to help make the roof. I first checked the angles in the video using an online calculator:



Miter Saw Cutting Calculator From Angles

This **calculator** requires the use of **Javascript** enabled and capable browsers. Depending on your equipment, you may find this calculator more appropriate but take a look at our conventional **Miter Saw Calculator** to evaluate, or use or **Miter Saw Blade Angle Calculator**. This calculator is designed to return the saw and cutting information needed for cutting sloped sided regular polygons. For use in this calculator, the number of sides is that of a regular polygon; for example, 4 for a square or rectangle, but not for a diamond in which all 4 angles are not the same. This value is MANDATORY; you may change from the default so long as the polygon is regular. Enter the angle of the sides; 90 degrees is vertical. Click on Calculate. Saw settings, based on YOUR type of saw, 0 degrees square or 90 degrees square, are calculated. The angles bends are also calculated but that is NOT a setting. You may click on Clear Values to restore the defaults and allow you to start over. We strongly suggest that you make test pieces from scrap materials to insure that the saw is properly setup before cutting intended materials.

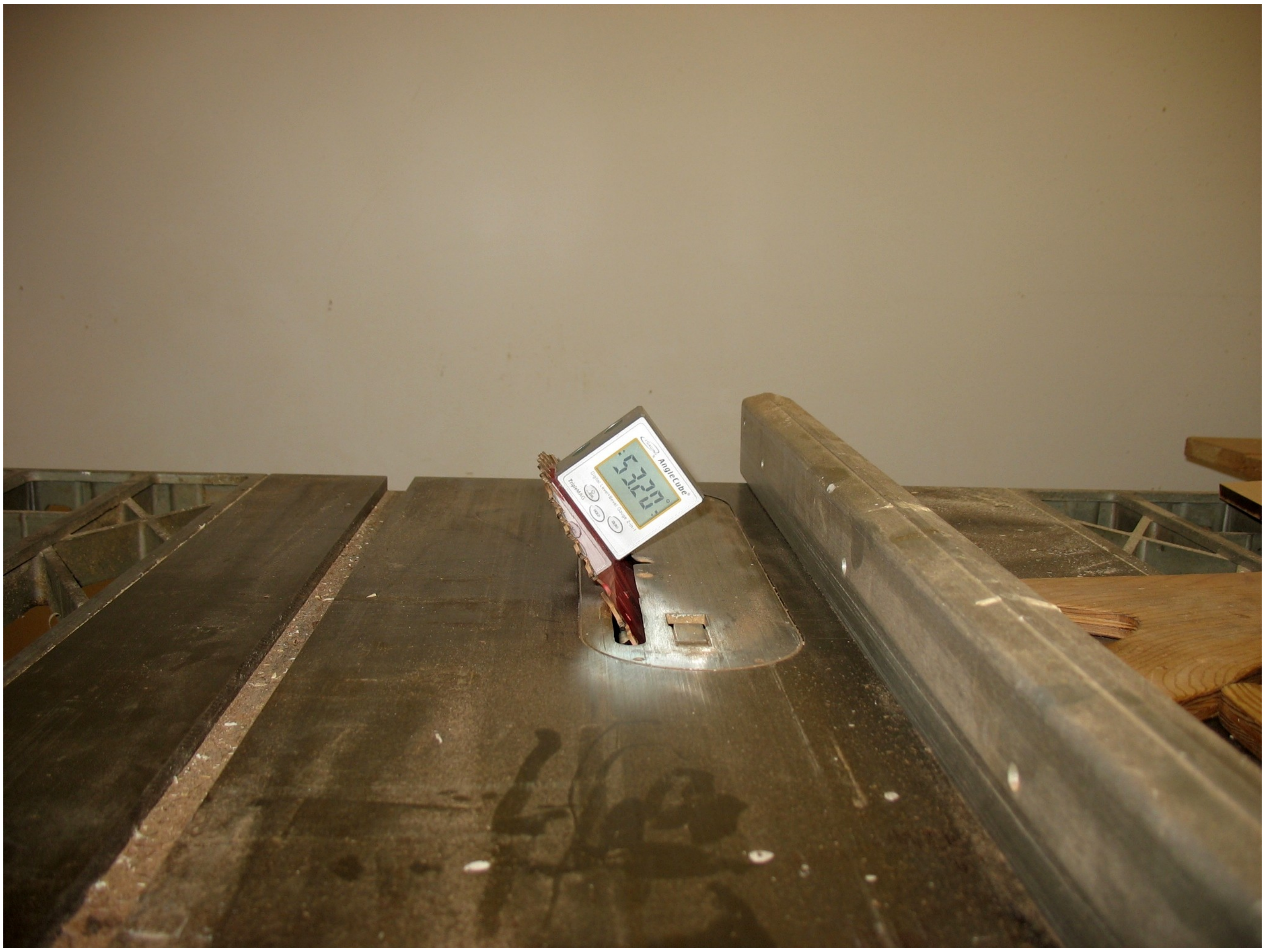
Miter Calculator		
Saw Required Data Entry		
Number Of Regular Polygon Sides	12	Sides
Angle Of Sides (Vertical = 90)	37	Degrees
Calculated Information		
Angular Bend Of Corners	30.00	Degrees
Calculated Settings		
Crosscut Miter (Square = 0)	12.08	Degrees
Crosscut Miter (Square = 90)	77.92	Degrees
Cut Bevel	8.96	Degrees

The angles used in the video **did** match the online calculator.
I decided to make a trial piece out of pine.

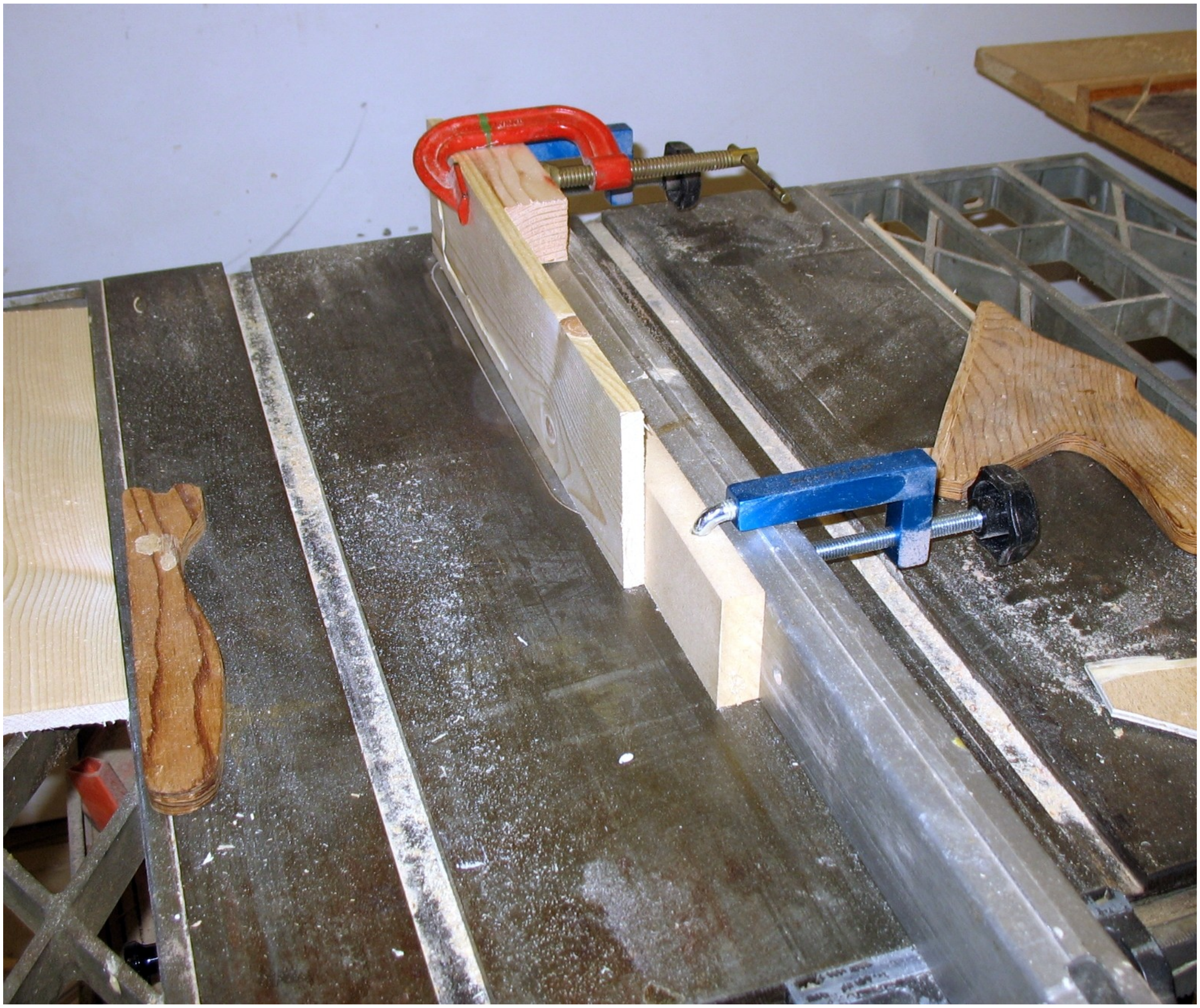
37 degree angle

The first step is to saw a 37 degree angle on the long edge of both blanks.

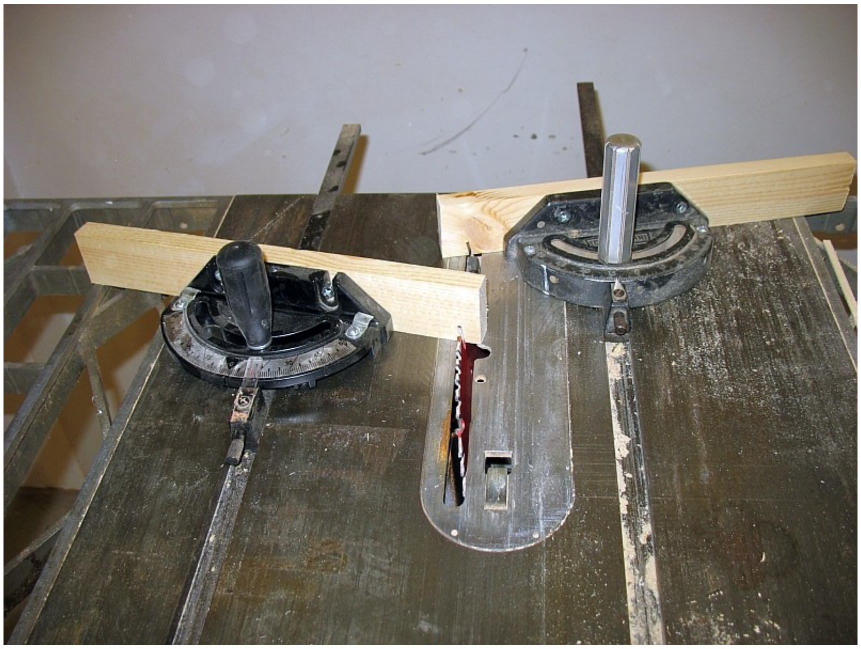
I used the digital angle finder that my brother-in-law Steve from Hawaii gave me as a Christmas gift to set the blade as close as possible to 37 degrees.

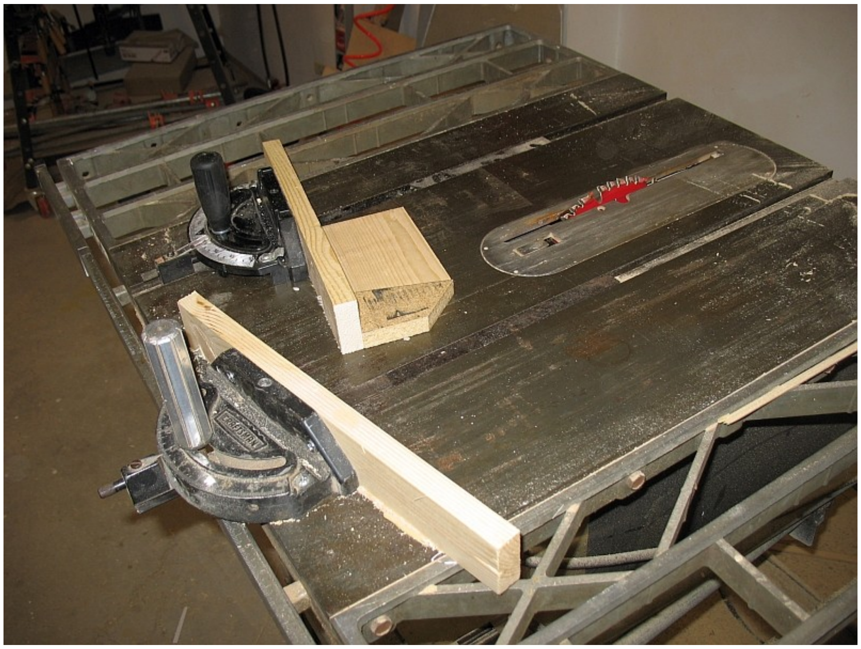


I used a piece of sacrificial pine to keep the blade from hitting the aluminum fence.



Next, you attach scrap blocks to two T-squares or bevel gages for the saw. I have two, so no problem there.

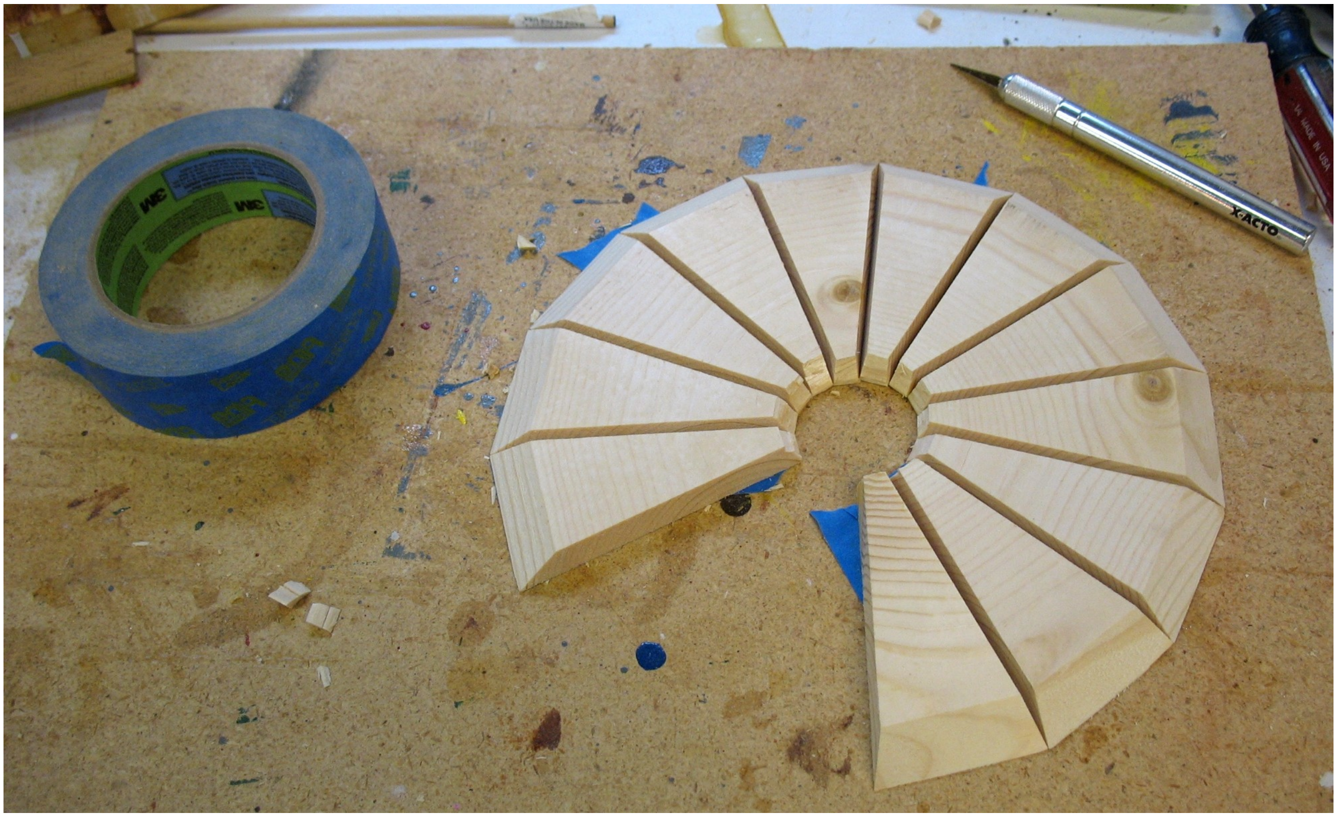




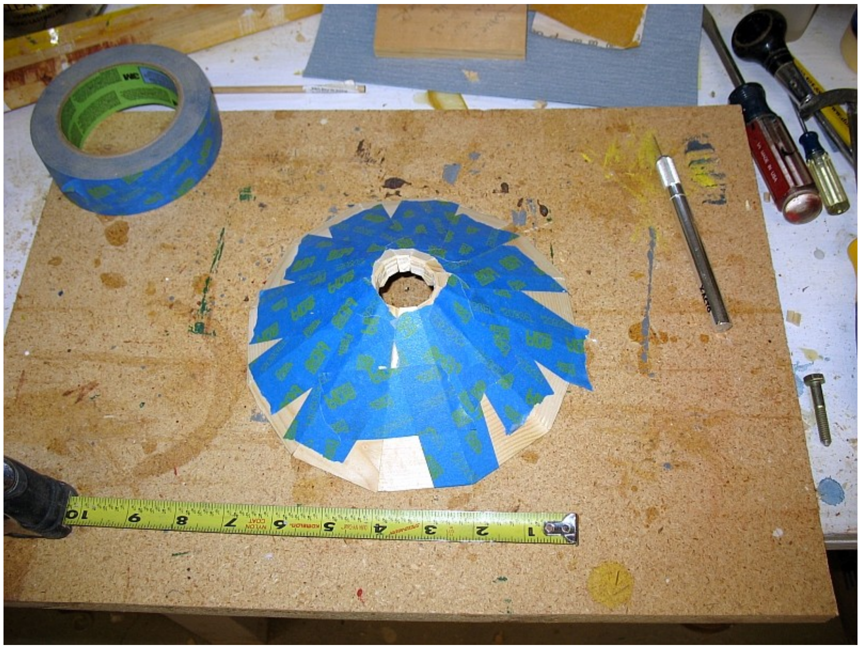
You use a scrap piece for a length gage when sawing one angle.....

Once you get the 12 pieces sawn, you attach them together with blue masking tape..

You fill the cracks with glue, invert the assembly and squeeze it into shape.



After you get them together, you tape the last joint to hold it all together to dry.
You invert it and fill any gaps with yellow Titebond glue and let it dry.



This all was going ok until I noticed the finished roof was too big for the carousel.

I went back and I goofed up on 1 dimension. The linked video said each wedge should be 1-15/32" wide, and I mis-read it as 1-15/16".

I guess that is why you do a sample first !!

Out of Walnut

I did not order enough walnut for 2 carousels. I had some left over raw walnut firewood that I machined into boards. This took a while.

Lots of Wedges

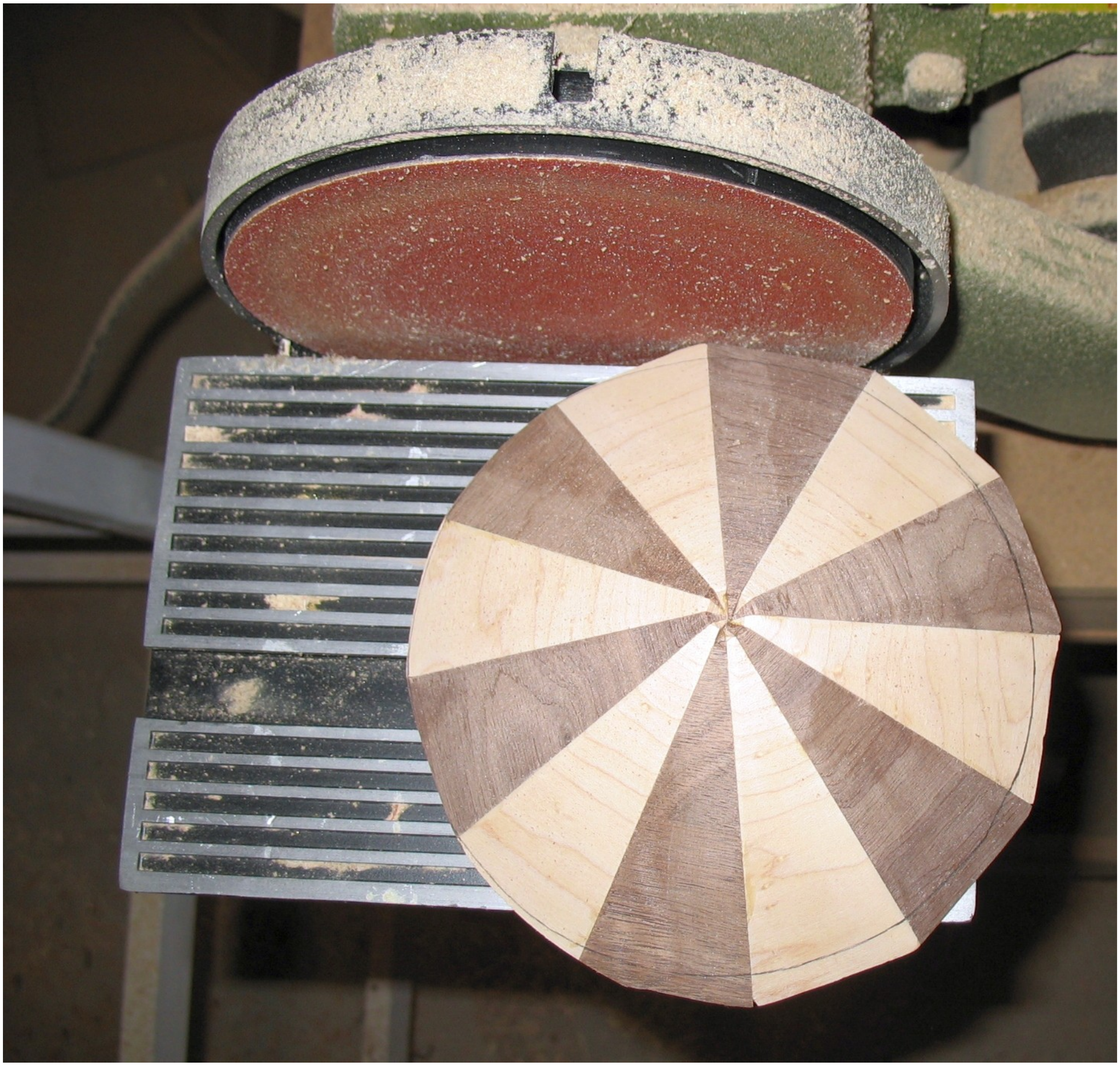
I made sure I had plenty of wood blanks when I set up the saw again to make the carousel top wedges. I ended up with enough wedges to make 3 carousel tops....that is a lot of wedges !!

I used a small artist's brush to make sure each face of the wedge was coated liberally with Titebond glue. I used a wet rag to remove the excess glue from inside the carousel top after it was final taped.

These 3 carousel tops came out a smaller diameter as expected when I used the correct wedge width dimension.

They must fit into the wavy ring, so you must reduce the final diameter to match the ring ID. I used a combination of scroll saw and stationary disc sander to reduce them to the right diameter to fit into the ring.

You sand the top horizontal and add a finial to it.



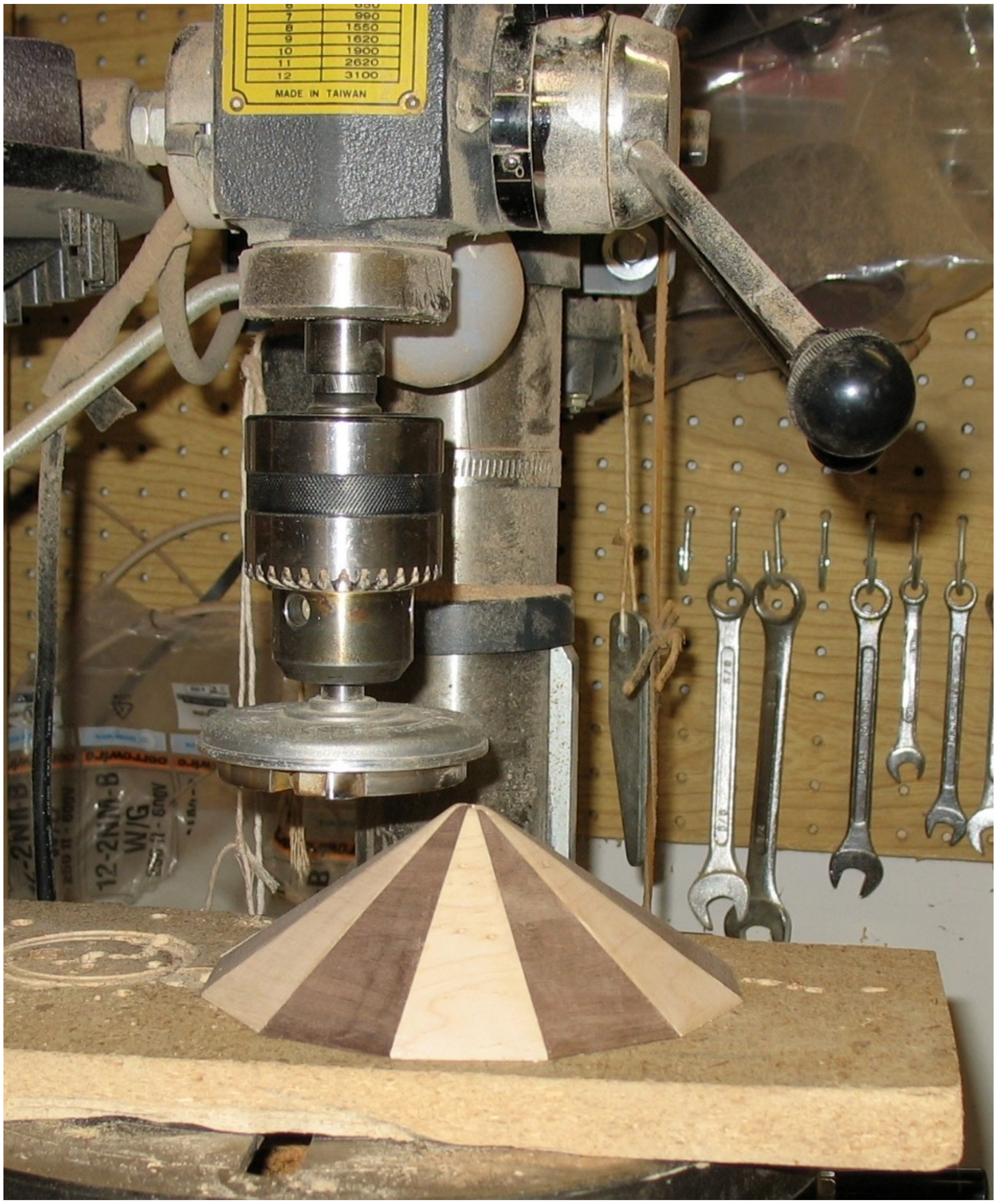
I ordered the finials and have not received them yet. I could turn it on the lathe, but they are so cheap it is not worth my time.

To round the carousel top, I switched from scroll saw and disc sander, to just the disc sander only as shown below:

Acorn Finials

I received the finials I ordered, and they were perfect for these carousel tops. First, I used the Wagner Saf-T-Planer on the drill press to make the top of the carousel flat for the finial. You can try sanding this by hand, but if you are not perfectly horizontal, you will see the finial move excessively as you rotate the carousel.

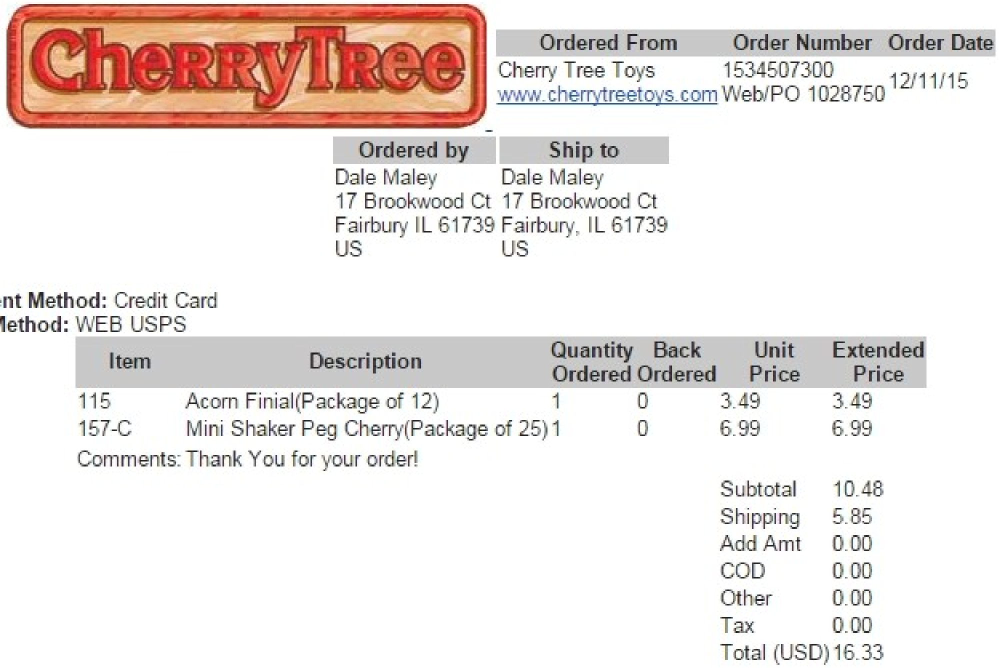
I just "kissed" the top with the planer, to avoid tearing up wood with an excessive rate of stock removal.



The finials come with a tenon, that I hand sawed off and disc sanded smooth.

I screwed the finial to the top of the carousel per the plan's recommendation.

The finial really looks nice!



CherryTree

Ordered From	Order Number	Order Date
Cherry Tree Toys www.cherrytreetoys.com	1534507300 Web/PO 1028750	12/11/15

Ordered by	Ship to
Dale Maley 17 Brookwood Ct Fairbury IL 61739 US	Dale Maley 17 Brookwood Ct Fairbury, IL 61739 US

Payment Method: Credit Card
Ship Method: WEB USPS

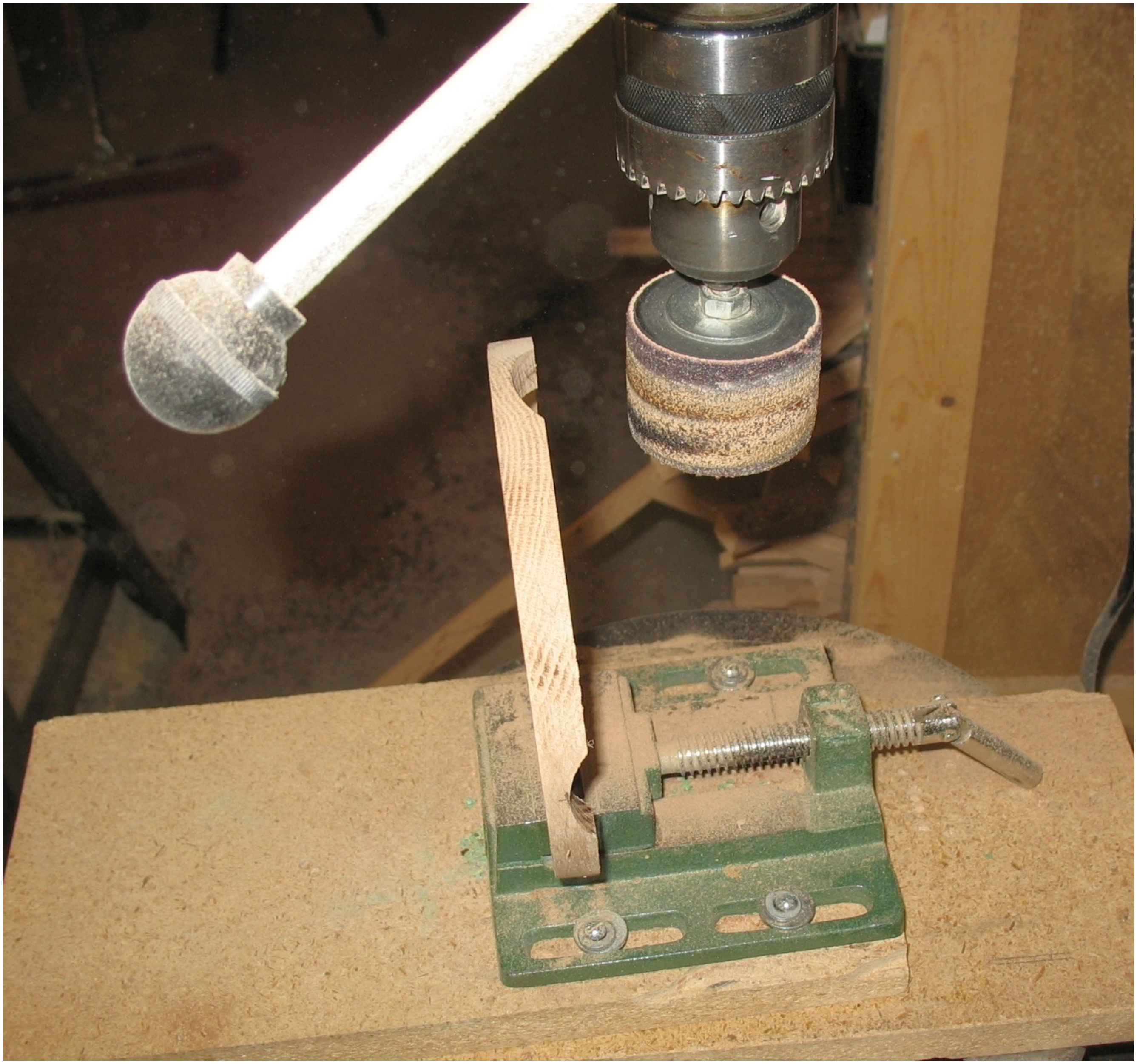
Item	Description	Quantity Ordered	Back Ordered	Unit Price	Extended Price
115	Acorn Finial(Package of 12)	1	0	3.49	3.49
157-C	Mini Shaker Peg Cherry(Package of 25)	1	0	6.99	6.99

Comments: Thank You for your order!

Subtotal	10.48
Shipping	5.85
Add Amt	0.00
COD	0.00
Other	0.00
Tax	0.00
Total (USD)	16.33

Wavy Ring

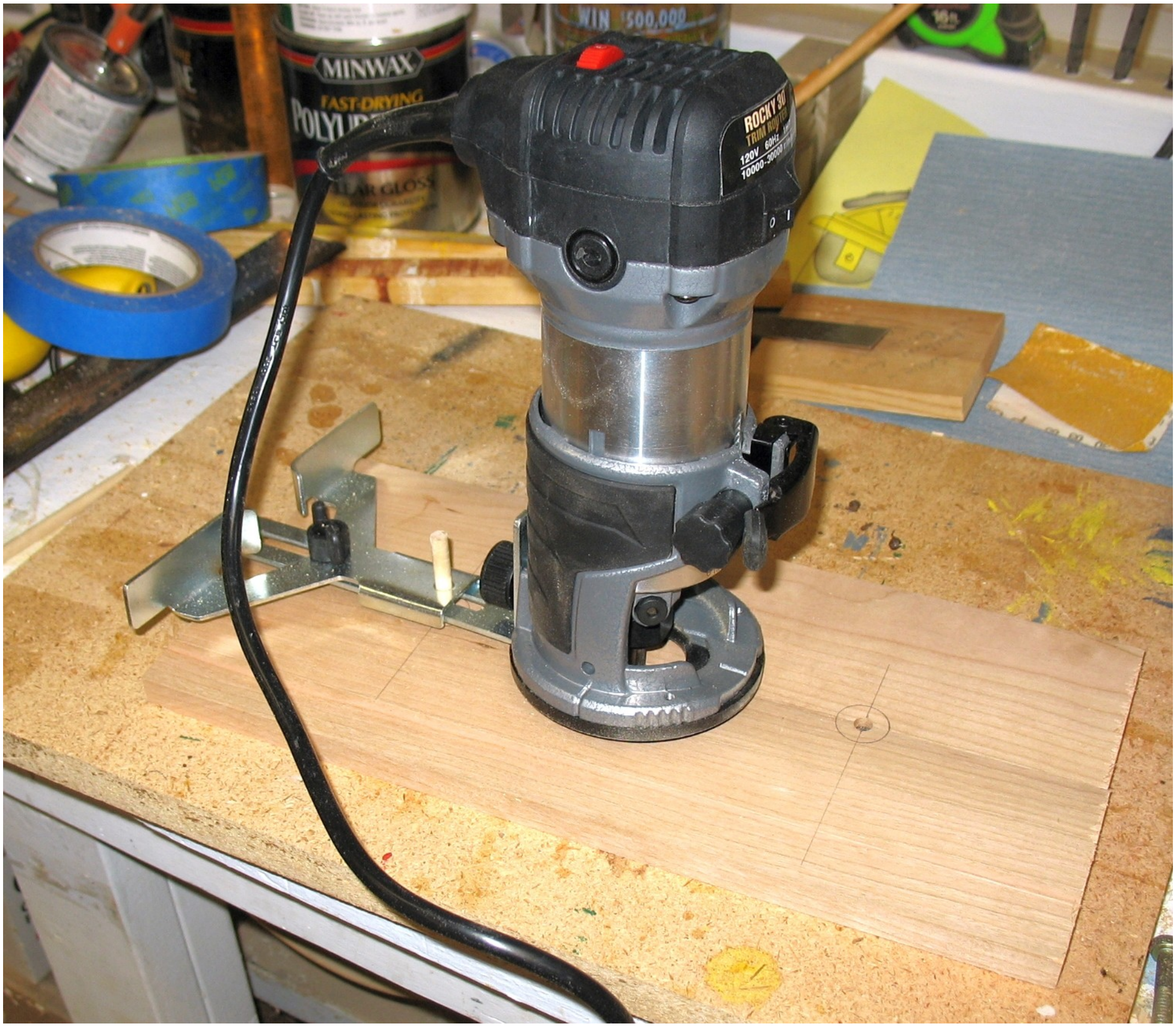
I scroll sawed the wavy ring slightly larger than the pencil mark, so I could drum sand the OD and ID on the drill press drum sander. Then I put the ring in my vise to keep it vertical, and sanded in the shape using my 2 inch drum sander.



Top and Bottom 6 inch bases

My Sears router will not make a 6 inch circle, it is too small for the radius attachment to work. I got out my new little router, and it has an attachment to allow you to go smaller. It is brand new, and I had to rework the locking pin so it would lock while tightening the collet nut.

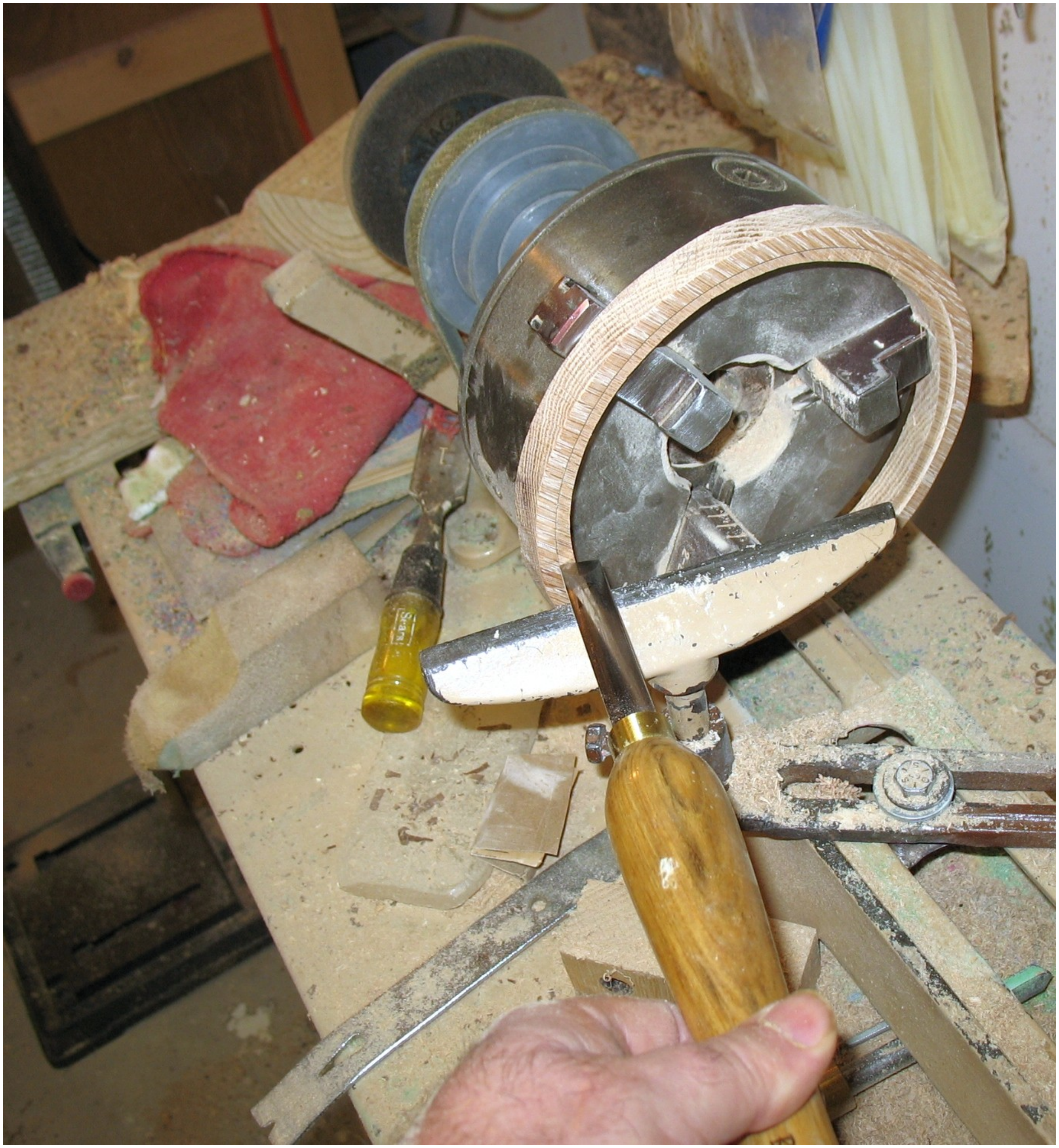
You can use a 1/4" dowel as the rotation point with this router. I got some burning on the cherry, and had to take it out with the drill press drum sander.



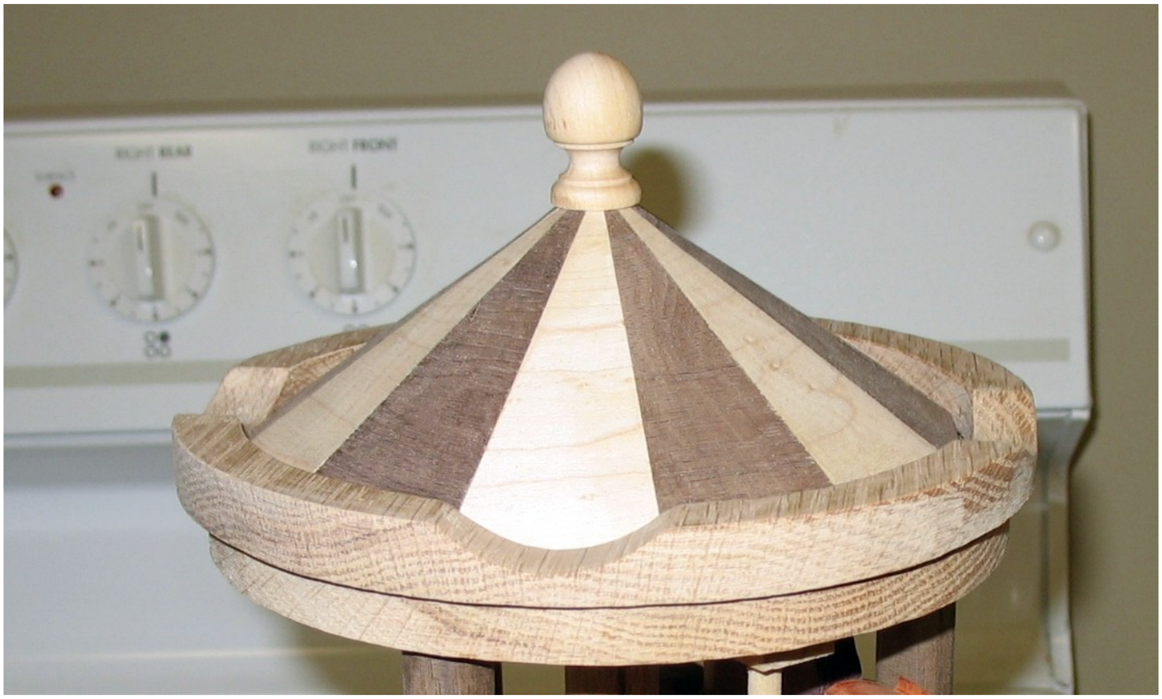
Because I got the burning and had to sand it out, I switched to scroll sawing the 2nd set and finish sanding to the line on the drill press drum sander.

Lathe Work

The top 6 inch base needs a groove cut in the OD to allow the wavy ring to set on it. I used my lathe to do a trial & error fit until the fit was right.



Finished Carousel Top, Top Base, and Wavy Ring



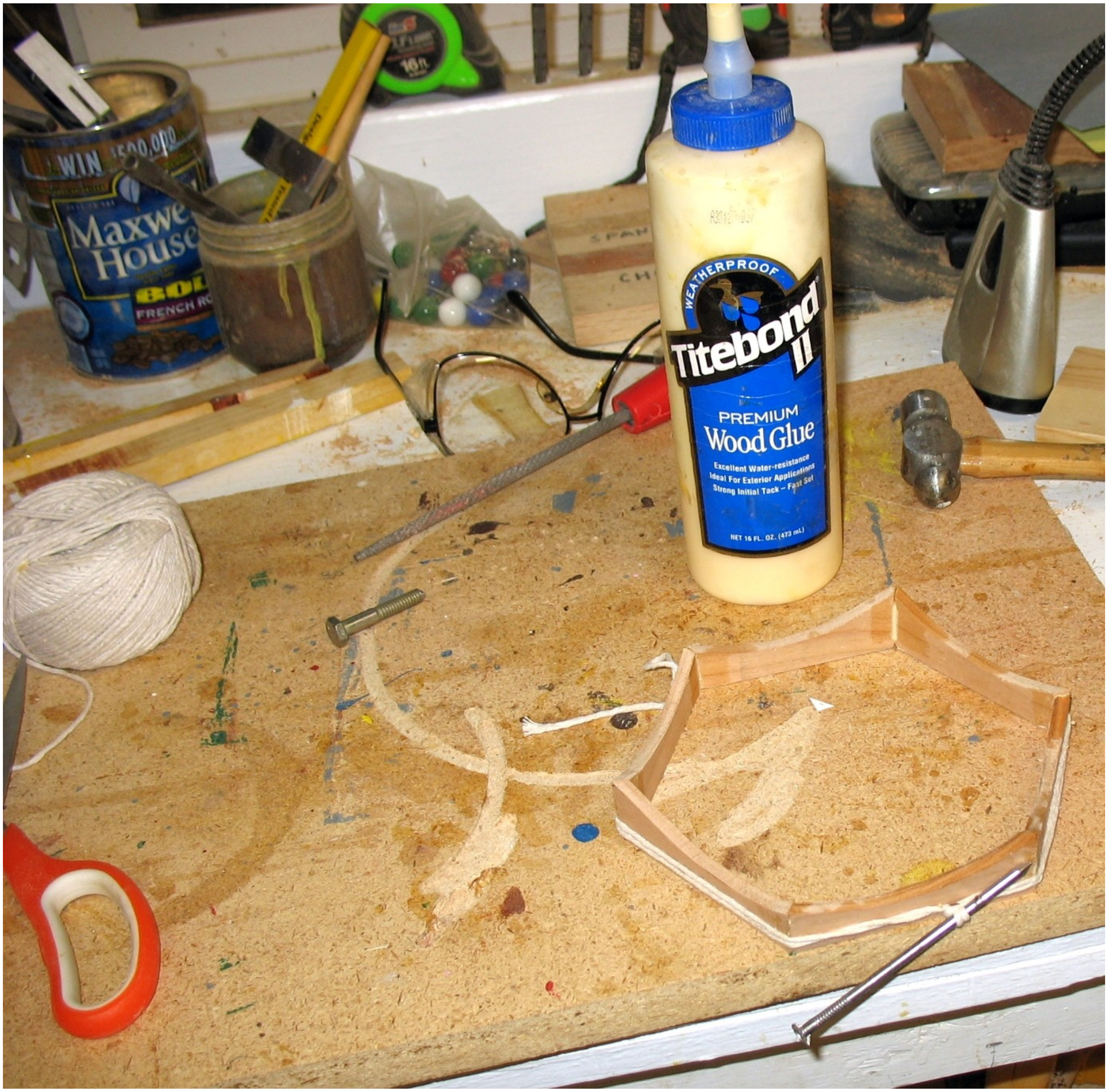
A lot of labor hours in making this sub-assembly !!

Half-Round 1/4" Dowels

You need to make the top 1 inch of the pony rods half-round. The magazine plans call for using a table saw and feed the 1/4" dowel in 1 inch.

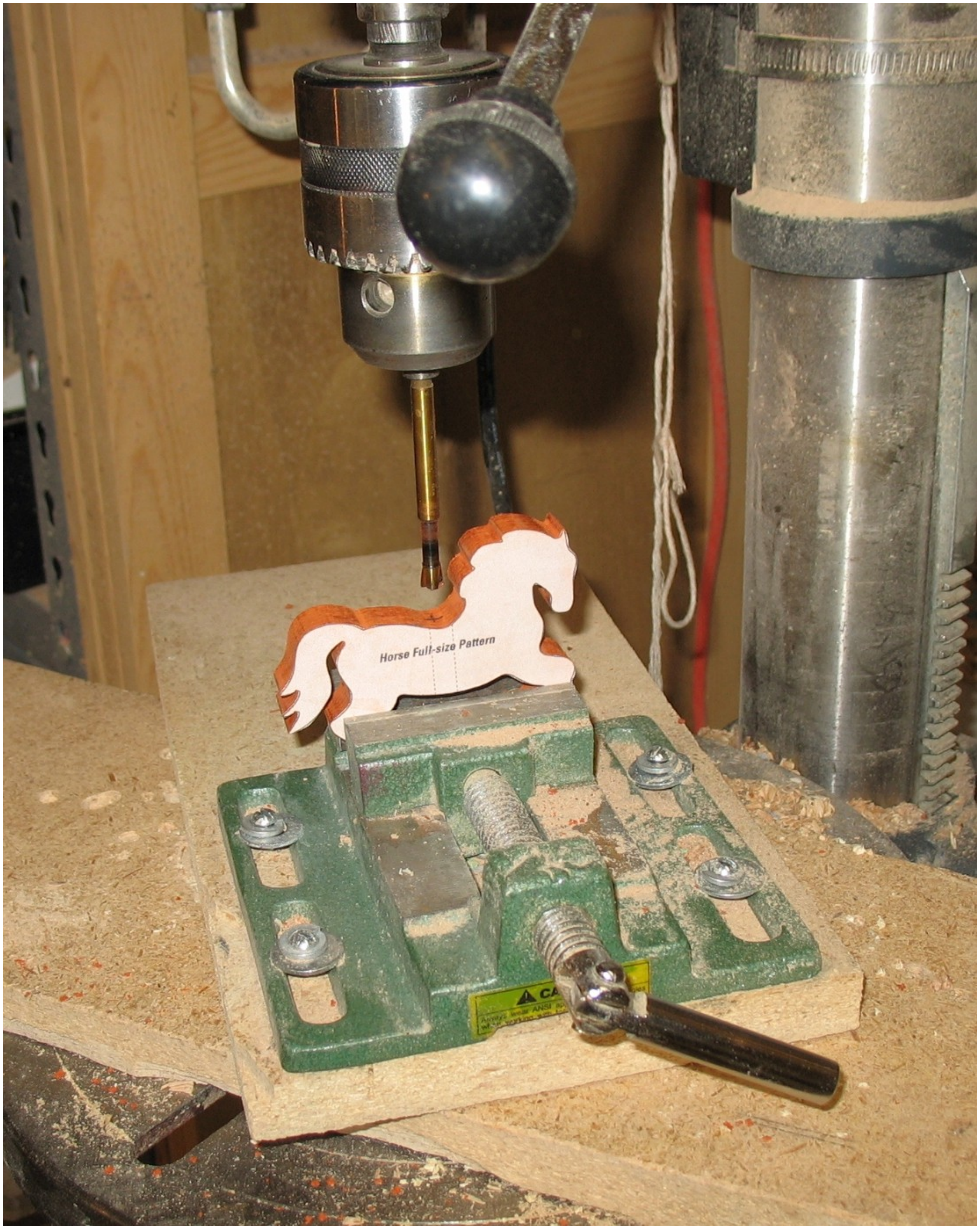
I would think this would cause the end of the dowel to blow up. I chose to sand half the dowel away using the stationary disc sander. This worked safely and relatively quickly. I could also do trial & error fitting to the half-round block on the same sander.

Festoons
I used cherry to make the festoons. I sawed the 30 degree angles on the miter saw, then used the string and nail method to clamp them.

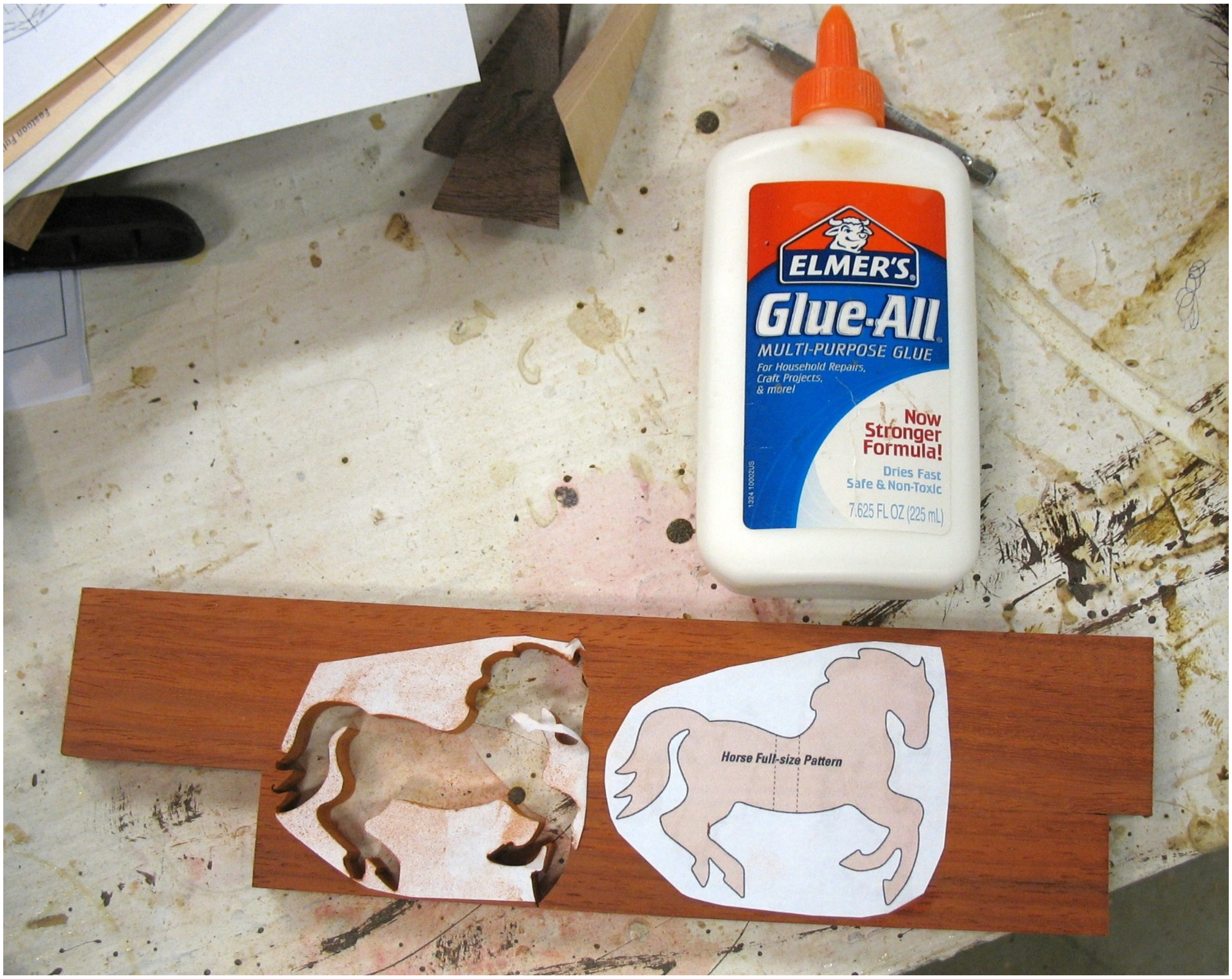


Ponies

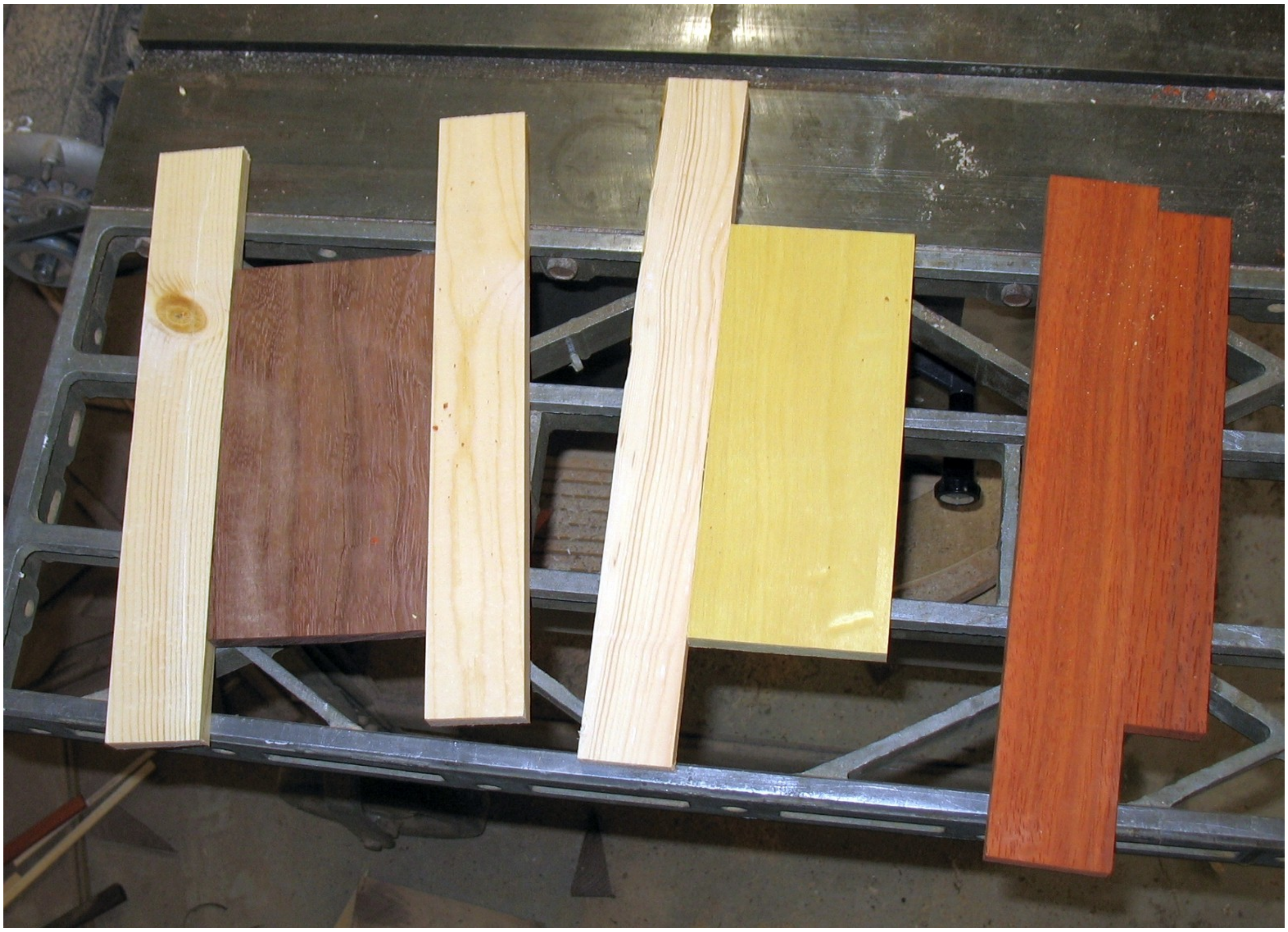
I decided to use padauk for a red pony, yellow heartwood for a yellow pony, and purple heart for a purple pony. Here is the first pony I made.



Plans say to make them 3/8" thick, but that only leaves 1/16" on a side with the 1/4" dowel hole. I made mine 1/2" thick to allow for the 1/4" hole not being perfectly on center or drilled straight.



Horse Full-size Pattern
Horse Full-size Pattern
Horse Full-size Pattern
Horse Full-size Pattern
Horse Full-size Pattern
Horse Full-size Pattern

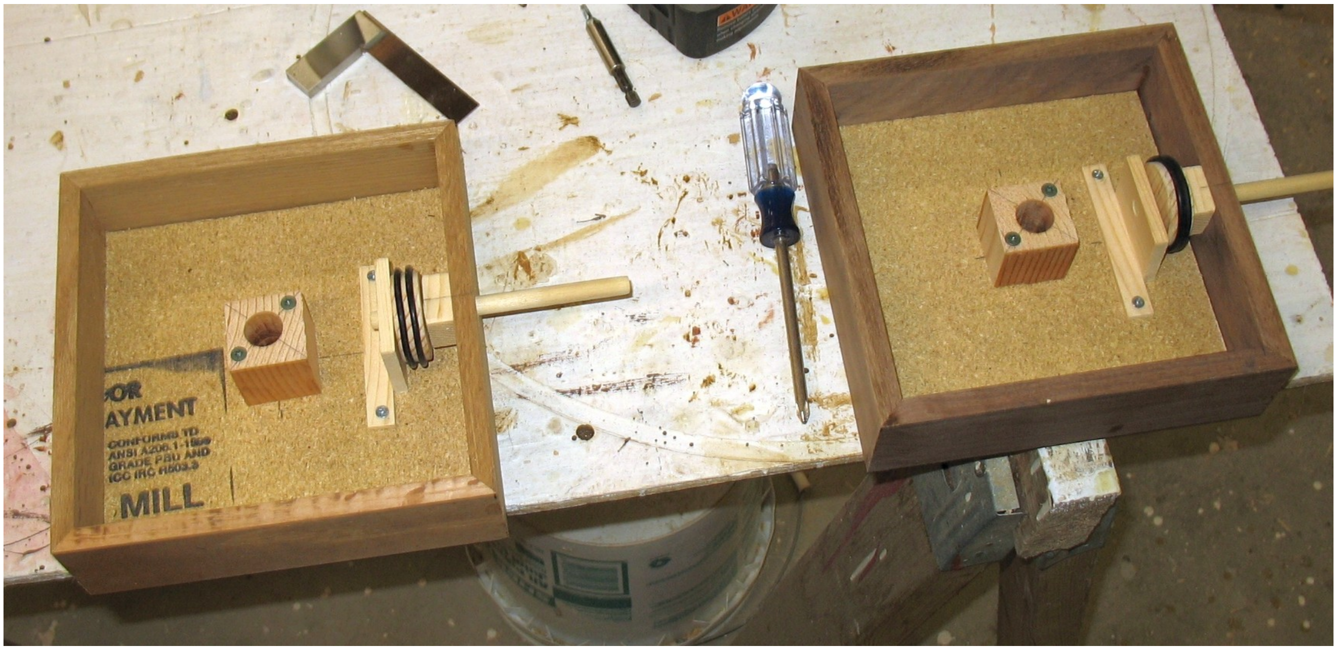


Glued up blanks to make ponies. Pine on sides is to make them long enough to run through the planer.

TIMER

Base

I used hot-melt glue to attach the cam or drive ring to the particle board base. I usually don't use hot-melt on my projects because it is not as strong as yellow titebond or CA glue. I thought it would be ok on this project since there is very little stress on the ring.



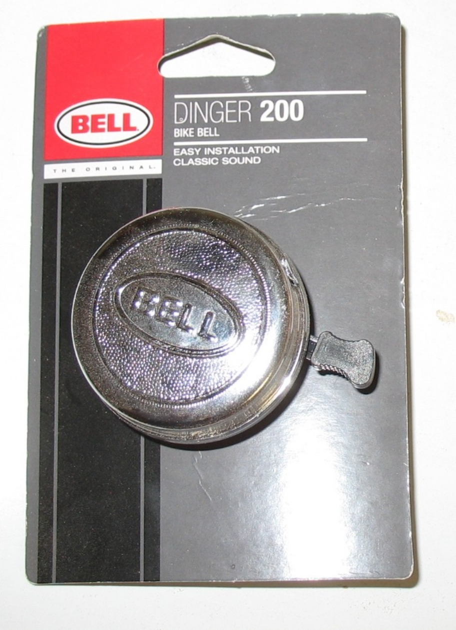
I glue the paper patterns onto the wood use white Elmer's glue, then when done scroll sawing, wash the paper and glue off with a wet dish rag.

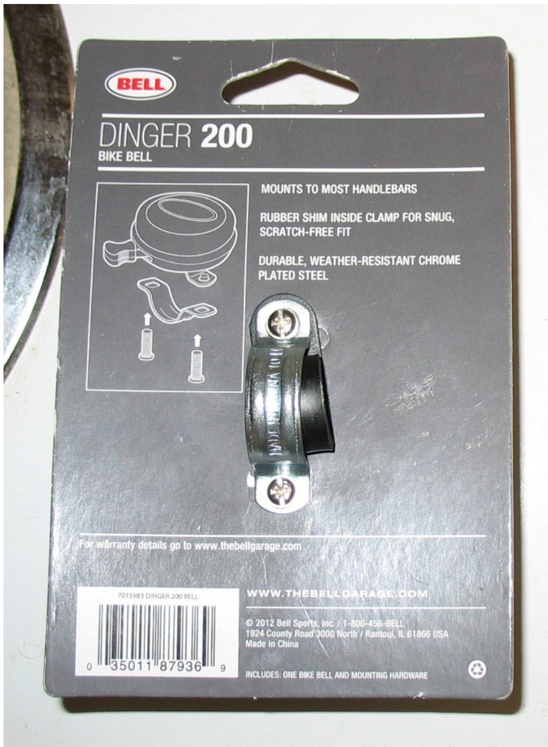
Nearing the End

As I started final assembly of the carousels, I had an issue with one carousel where the center 3/4" pole was not perpendicular to the horizontal. Found out my drill press was 1.5 degrees out of perpendicular. I drill a new main bearing block closer to 90 degrees. I also used the miter saw to slightly angle the bottom of the main bearing block also. It is a good thing the center bearing block is removable, so you can adjust it until the 3/4" pole is vertical.

The Bell

Unfortunately, the magazine article did not give a source for the bicycle bell.
I searched online at Amazon, googled it, and checked at my local Ace and Big R stores. I could not find any bells like the one used in the magazine. The best choice I could find was at Wal-Mart.




BELL
DINGER 200
BIKE BELL
MOUNTS TO MOST HANDLEBARS
RUBBER SHIM INSIDE CLAMP FOR SNUG, SCRATCH-FREE FIT
DURABLE, WEATHER-RESISTANT CHROME PLATED STEEL
For warranty details go to www.thebellgarage.com
WWW.THEBELLGARAGE.COM
© 2012 Bell Sports, Inc. / 1-800-456-BELL
1924 County Road 3000 North / Rantoul, IL 61866 USA
Made in China
7015983 DINGER 200 BELL
0 35011 87936 9
INCLUDES: ONE BIKE BELL AND MOUNTING HARDWARE

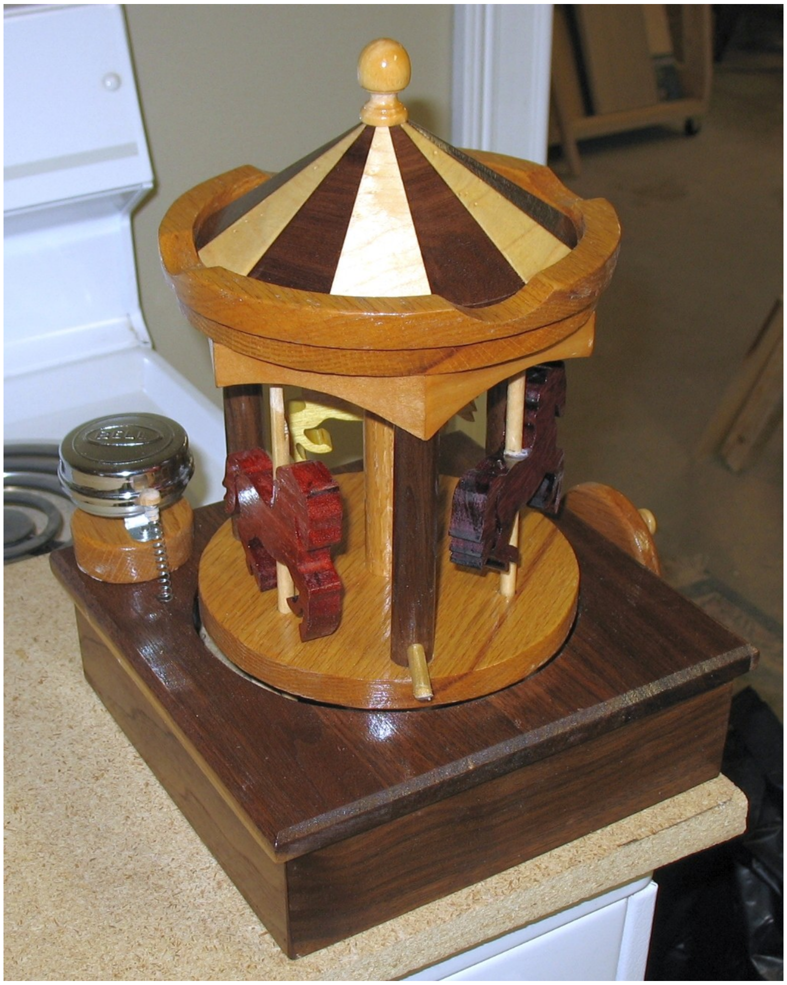
This bell is bigger physically than in the magazine picture, but I made it work.

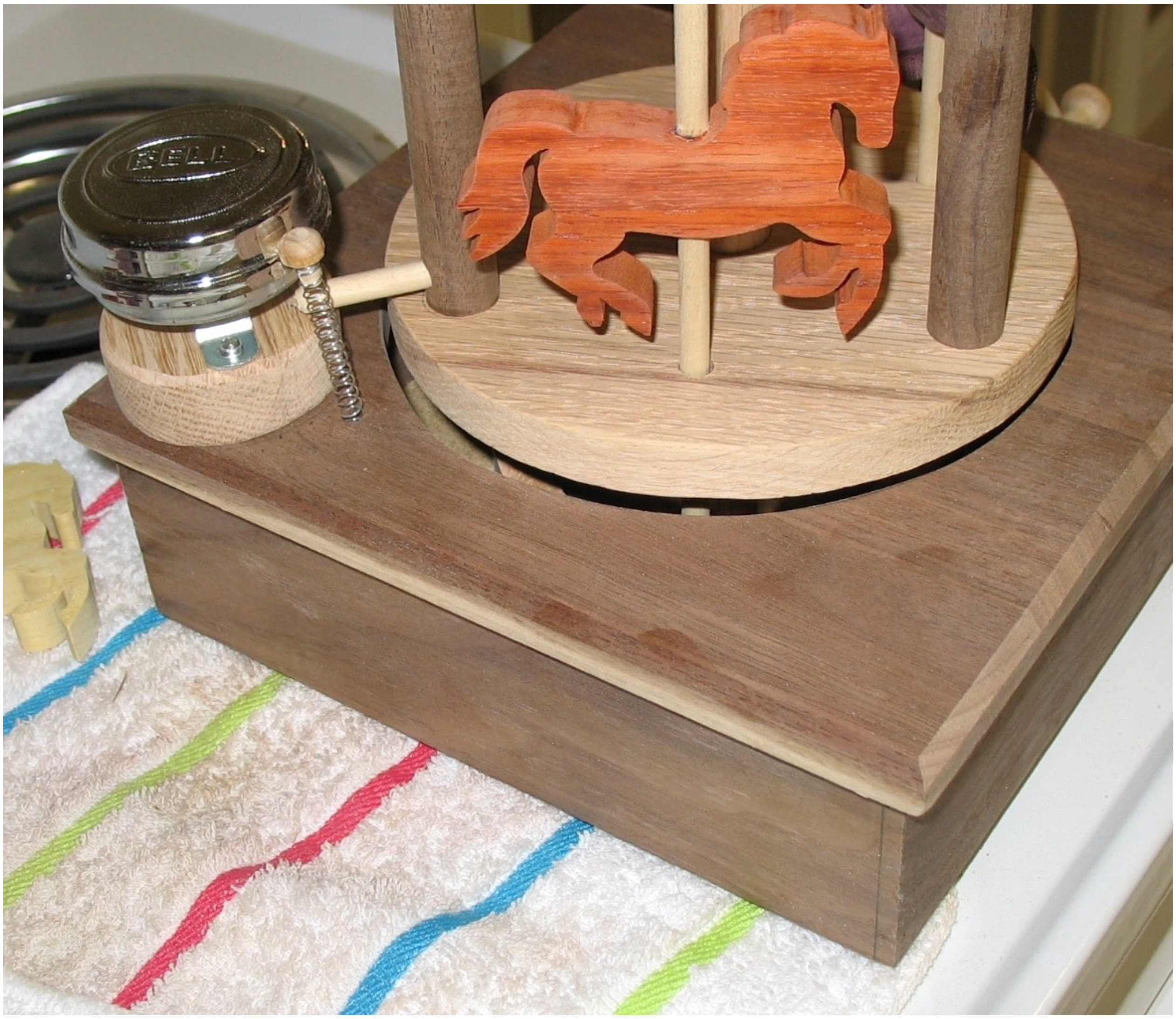
I used a 2 inch OD disc about 3/4" high, to mount the bell to the base. I mounted the 1/4" dowel on the vertical carousel shaft just above the bottom base.

I used (1) 1/4" dowel plus 1 screw to attach the 2 inch OD to the base. I used the 2 machine screws that came with the bell to attach it to the 2 inch OD.

You need to account for the right heights with respect to the bell height, the spring length, and where the 1/4" activation dowel are located, as shown in the picture above. The 1/4" dowel has to be high enough to clear the 2" OD bell mounting base.

I bought a package of springs from my local Ace Hardware.



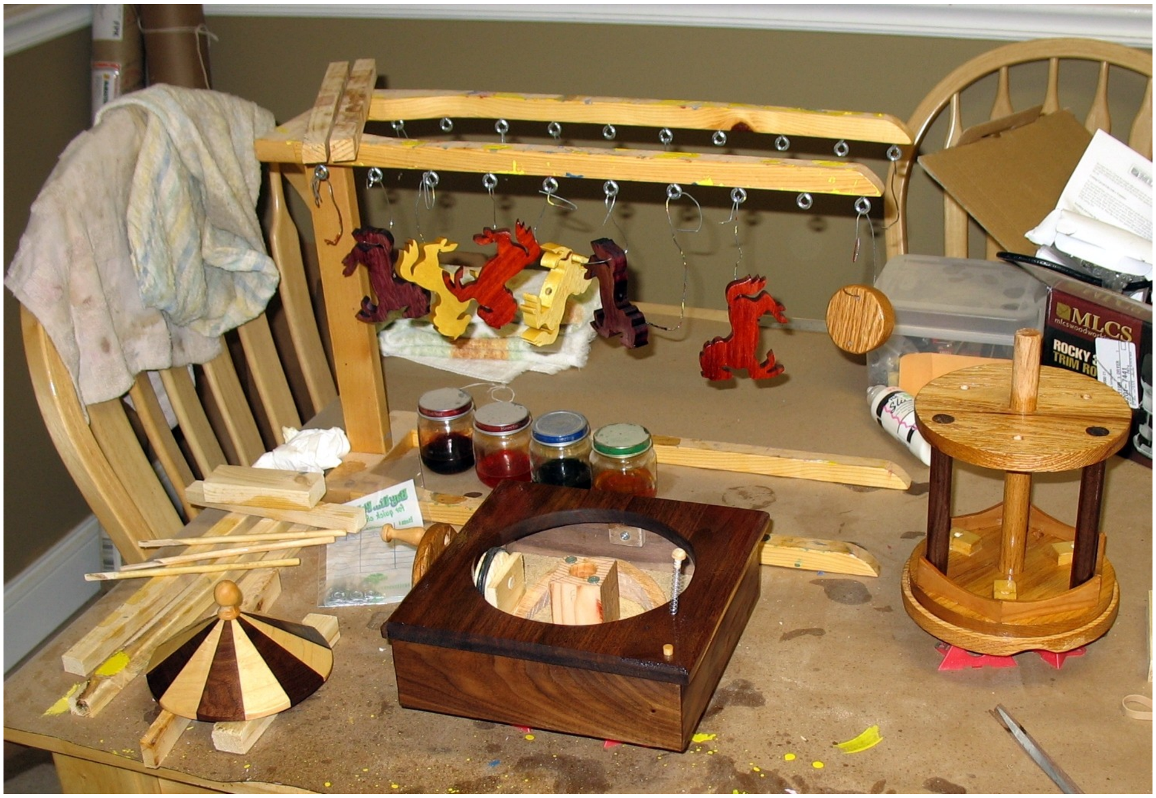

BELL

Stain

The only stain I used on the carousels was Golden Oak for the red oak parts.

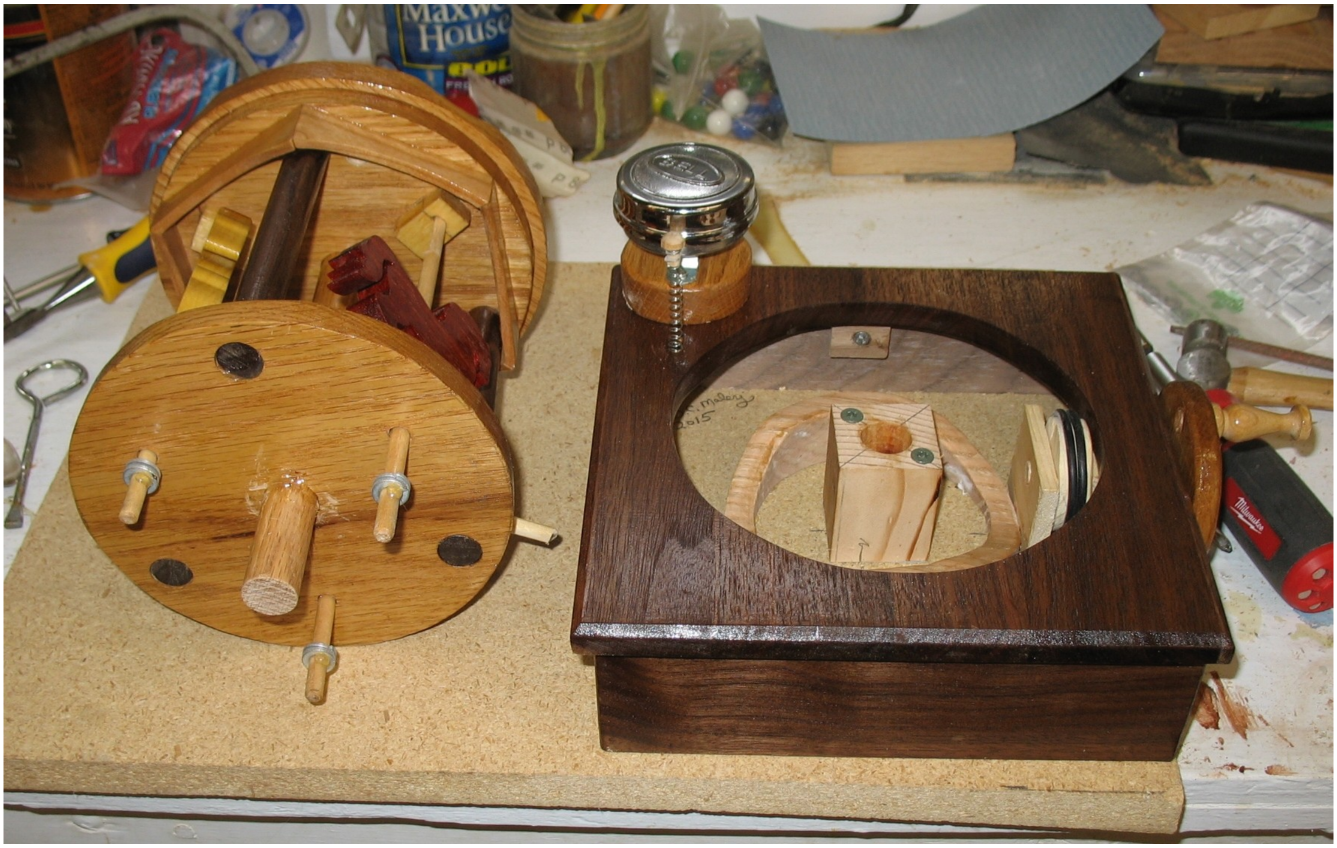
1st Carousel Assembly in the Varnish Shop

I decided it was easier to varnish the whole assembly as shown above, versus completing the assembly and trying to varnish the entire assembly.



Washer Weights did not Work

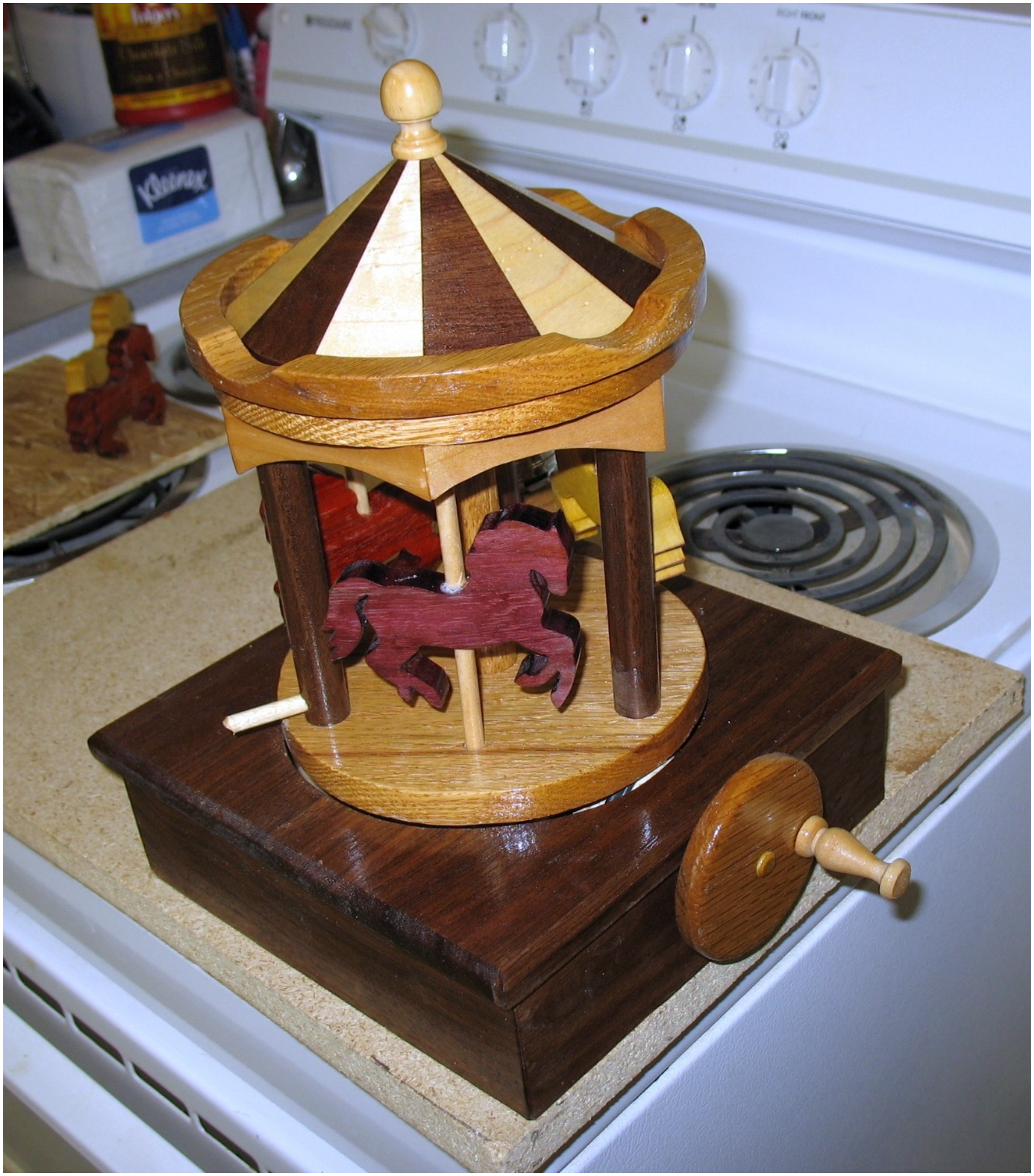
The original plans call for putting 1 or 2 split washers on the bottom of each pony shaft to add weight, and help the ponies go up and down. I hot melt glued 2 washers to each of the 3 pony shafts.



I tried it out, and it did not work!! The washers hit the vertical piece of wood that supports the crankshaft. I removed the washers. It seems to work fine without them.

1st Carousel Completed

Here are photos of the 1st completed carousel.......



YouTube Video:

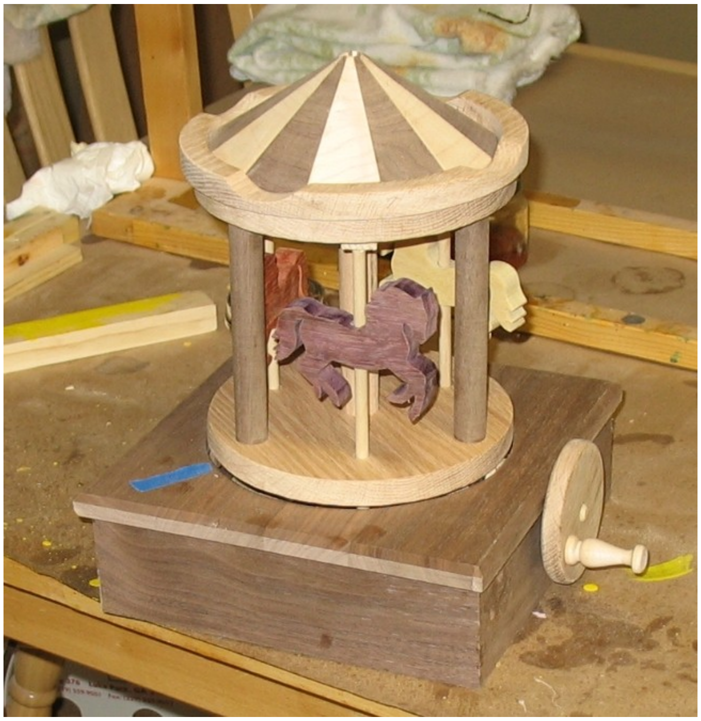
I made a Youtube video of the Carousel in operation......

https://tinyurl.com/bdeewkbh

All of the hours of labor that went into this carousel were worth it, it is really cool to crank it, watch the horses go around, and up and down, and then strike the bell

2nd Red Oak Carousel

Now, on to completing the 2nd unit. Here are all the parts except the main cover plate, which I have to make next.



Closing Thoughts

I actually like the all red oak carousel better than the walnut carousel. The walnut makes the carousel look too dark compared to the red oak. Hopefully, these will become family heirlooms that last for many generations!

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Lumberjocks.com

I posted this project to Lumberjocks. You can use the link below to see this posting.

https://www.lumberjocks.com/showcase/hand-cranked-toy-carousel.59982/

November 2021 Broken Pony

One of the notched ¼” shafts broke. I was able to fix it. I made 3 new dowels out of stronger red oak versus birch.